Project Title: Sacramento Federal Non-Attainment Area for PM2.5 Community Air Shed Project

Applicant Information:

Sacramento Metropolitan Air Quality Management District
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DUNS number:

Budget Summary:

EPA Funding Requested	Voluntary Cost Share	Total Project Cost
$ 15,505,053	$13,872,201	$29,377,254

Project Period:

October 1, 2020 – July 31, 2025

Project Description:

Sacramento AQMD is the primary applicant and will coordinate activities with the other air districts in the Sacramento Federal Nonattainment Area (SFNA): El Dorado Air Quality Management District (EDC AQMD), Placer County Air Pollution Control District (PC APCD) and Yolo Solano Air Quality Management District (YS AQMD). This project includes five PM2.5 reducing components to be implemented in El Dorado, Placer and Yolo Solano communities within the SFNA area. Those components and the anticipated accomplishments are:

1. **Woodstove Replacement (WR).** Replace 2,800(+) residential non-certified wood burning appliances with cleaner burning devices.
2. **Unpaved Road Paving (URP).** Pave 11.3 miles of unpaved roadways.
3. **Biomass Chipping and Composting (BCC).** Chip approximately 1,500,000 cubic yards of residential biomass as an alternative to open burning. Distribute approximately 200 compost bins.
4. **Biomass Transport (BT).** Transport approximately 20,000 tons of biomass to a biomass to energy facility as an alternative to open burning.
5. **Agriculture Mobile Equipment Replacement (AMER).** Replace approximately 76 agriculture mobile equipment with cleaner equipment.

Project Location:

Sacramento 2006 24-hour PM2.5 NAAQS SFNA Area

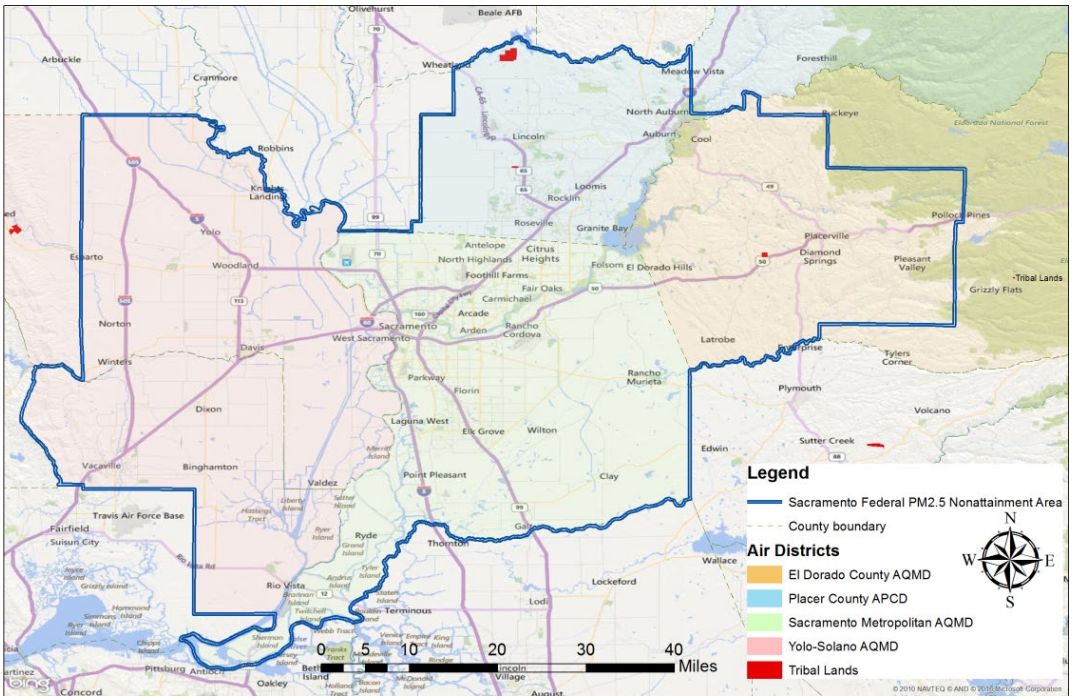
Work plan:

Section 1 Project Summary and Approach

A. Ongoing, Significant Emission Reductions & Consideration of Other Activities

The Sacramento Federal Non-attainment Area (SFNA)—which includes all or part of El Dorado, Placer, Sacramento, Placer, Yolo, Solano and Sacramento counties—was designated non-attainment for the 2006 24-hour PM2.5 National Ambient Air Quality Standard (NAAQS) in 2009 (Figure 1). EPA has determined the region is among the top five most polluted areas relative to the 24-hour PM2.5 NAAQS in the U.S. and eligible for Targeted Airshed Grant (TAG) funding. The four SFNA air districts are joining together on this project to achieve the overall goal of the TAG Program of reducing ambient PM2.5 air concentrations for our community residents. This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan in that the program will be administered efficiently and consistently throughout the targeted communities ensuring that more Americans are living and working in areas that meet high air quality standards.

Figure 1. Sacramento PM2.5 Nonattainment Area Boundaries.



Elevated 24-hour PM2.5 concentrations have been observed in winter, typically from November through February, throughout the SFNA. PM2.5 air quality data suggest local meteorological conditions often play a significant role during these episodes by creating adverse dispersion conditions and favoring the formation of secondary aerosols. During these periods, the stable layer above the ground is much deeper than a typical nocturnal inversion. Cold air is trapped in the Sacramento valley and foothill communities when the air mass stabilizes as high pressure aloft overtake the region. Under such circumstances, a prolonged strong inversion layer (or layers) limits vertical mixing, trapping local pollutants in a thin layer against the valley floor and eastern foothills. The SFNA topographical features lead to fast forming, more intense, and more persistent cold-air pools. This scenario has led to exceedances and violations of the 24-hour health standard for PM2.5 in the past. In other times of the year, PM2.5 concentrations are generally low and are well within the annual health standard for PM2.5.

The districts continually work to reduce PM2.5 emissions in the most cost efficient and effective manner. The approach taken to develop a project plan and this application to employ US EPA TAG funding was to review the application materials, review other successful projects, discuss with potential partners and convene district management discussions where project components were considered. TAG Projects reviewed included those previously awarded to and implemented by other air districts (Northern Sierra AQMD and the Idaho Department of Environmental Quality). We also reviewed Sacramento area districts' current and past projects implemented with limited district and State funding, and projects implemented by other entities. Air District APCOs and staff met on several occasions to determine which projects would most cost effectively reduce PM2.5 in their communities. Staff from all four districts contributed to the application development.

This project includes five components that address major emission categories in the Sacramento area: residential wood combustion, road dust, residential vegetation burning, forest and farm biomass burning, and agriculture mobile equipment emissions. Combined all component work will result in significant decreases of direct PM2.5 emissions along with some reductions in PM2.5 precursor emissions, specifically NO_X, SO_2 and VOCs. The associated products to be developed or produced include education and outreach materials, advertisements, new cleaner home heating devices, biomass chips, newly paved roadways and new agriculture mobile equipment.

The potential audiences for these programs are community residents, farmers, biomass transporters and forest management agencies within the SFNA. The benefits to the public include increased awareness of actions being taken and the programs they can participate in to reduce emissions, and ultimately improve air quality. Additional benefits from the wood stove program include the economic benefit of reduced home heating costs due to the utilization of more efficient home heating devices and the economic benefit to local communities from purchasing fuel locally rather than energy from a utility. Additional benefits from the chipping program include the reduction in wildfire risk and improved erosion control and water retention from the chips spread on properties. Additional benefits from the road paving project include increased public safety and reduced asbestos emissions as Oriental Street and Bear Creek Road are in Naturally Occurring Asbestos (NOA) areas. Additional benefits from the biomass transport project include the economic benefit to trucking company employees and greater availability of low-carbon renewable energy. Additional benefits from the Agriculture equipment program include reduced fuel usage and reduced food production costs.

These programs will achieve ongoing, significant reductions of direct PM2.5 emissions within the SFNA. Replaced uncertified wood stoves and old agriculture equipment will be destroyed. New woodstoves and agricultural equipment have long useful lives, on the order of several decades, during which emission reductions over older technologies will be achieved. Once paved, the roadways will continue to be maintained by the El Dorado County and Placer County Transportation Departments. Chip-sealed roads have a project life of about 7 years while asphalt paved roads have a useful life between 15-20 years. Vegetation will regrow, but after the chipping of the backlog of vegetation, residents will be better able to manage and minimize future overgrowth. Long term changes in behavior from open burning to chipping result in long term emission reduction benefits. Compost bins are projected to have a 10 years operational life.

We considered several other available PM2.5 and PM2.5 precursor emission reducing activities including on road sources, other mobile sources, stationary sources, construction and demolition. The group concluded that the projects selected for consideration were the most efficient and effective at reducing emissions. On road and other mobile sources are highly regulated by the State of California. As the State's regulations on trucks, busses and off roads equipment are phased in emissions from those sources will decrease dramatically. Stationary sources are highly regulated by California's 35 air districts. District rules address emissions from all significant stationary sources. District's also have in place and proactively implement fugitive and NOA dust control Rules that control emissions from construction and demolition activities. The area source and agriculture projects chosen for this grant program were determined to be the best options for fostering further emission reductions.

Component 1—Reducing Residential Wood Combustion Emissions

Residential wood combustion contributes 52% of direct PM2.5 emissions and 11% of the PM2.5 precursor emissions in the SFNA (Figure 2). This project component will reduce emissions from residential wood combustion by changing-out old uncertified wood burning devices, manufactured before July 1, 1988, and replacing them with cleaner heating devices. Older, uncertified wood stoves are inefficient, high-polluting, and may pose a fire risk. United States Environmental Protection Agency (U.S. EPA) certified wood stoves burn more cleanly and efficiently, thereby reducing particulate matter emissions. For the purpose of this Program, the term old un-certified wood burning device refers to a free-standing wood stove or a wood burning device in a masonry fireplace cavity or other enclosure (commonly referred to as an insert).

This project component will build upon successful but underfunded programs that have already replaced over 2,000 old un-certified wood stoves in the SFNA. Despite this significant progress over 10,000 old stoves remain primarily in the foothill communities. Districts will implement this component in accordance with California Air Resources Board (CARB) guidelines. Increased funding amounts will be available to residents of disadvantaged and low-income communities.

Participating residents will be eligible for an incentive if they remove and destroy an uncertified wood stove and replace it with a wood or pellet stove that meets the current EPA Step 2 certification standard or an electric or gas home heating device. Residents will also be eligible if they simply remove and destroy an old uncertified wood stove and then utilize another existing heat source(s) already in the home. The replacement of fireplaces will not be an eligible expenditure in this program. Because fireplaces are very inefficient heating devices, they are rarely used as a primary heat source.

We will employ a tiered approach that will provide a higher incentive amount to residents that meet a low-income eligibility requirement or reside in a disadvantaged/low income community. Applicants that do not meet the low-income requirements or do not live in a low income area will be eligible for a lower standard incentive amount. Low income eligibility requirements will be as outlined in the CARB Guidelines (Attachment F).

Disadvantaged community census tracts are identified by CalEPA per SB 535 (De León, Chapter 830, Statutes of 2012), and available at http://www.calepa.ca.gov/EnvJustice/GHGInvest/ Low-income communities are defined as census tracts with a median household income at or below 80 percent of the statewide median household income or with a median household income at or below the threshold designated as low-income by Department of Housing and Community Development's State Income Limits adopted pursuant to Health and Safety Code Section 50093 (AB 1550 (Gomez, Chapter 369, Statutes of 2016). Low-income community maps can be viewed at https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm Low-income households are those with incomes at or below 80 percent of the statewide median household income or with household incomes at or below the threshold designated as low-income by the Department of Housing and Community Development's list of state income limits adopted pursuant to Section 50093. (AB 1550 (Gomez, Chapter 369, Statutes of 2016))

Component 2—Reducing Road Dust Emissions

EDC AQMD will partner with EDC Transportation Department (EDC DOT) to double chip seal slurry unpaved roads:

i.	Bear Creek Rd	146,361 sq ft	$73k	ADT 49
ii.	Oriental St	13,283 sq ft	$12k	ADT 113
iii.	Sand Ridge Rd	334,540 sq ft	$305k	ADT 133
iv.	Mount Murphy Rd	143,577 sq ft	$115k	ADT 45
v.	Russel Hollow Rd	69,603 sq ft	$56k	ADT 2 seasonal increases
vi.	Tullis Mine Rd	23,649 sq ft	$19k	ADT 108
vii.	Sweeney Rd	260,915 sq ft	$209k	ADT 44

PC APCD will partner with Placer County Roads Division to asphalt pave the following road:

i.	Brewer Rd	211,200 sq ft	$800k	ADT 260

Road dust accounts for 6% of directly emitted PM2.5 emissions in the SFNA (Figure 2). Of the unpaved roads in the SFNA portion of El Dorado County and Placer County, these proposed roads have the highest Average Daily Traffic (ADT) counts. Additionally, Bear Creek Road and Oriental Street are in NOA areas. EDC AQMD partnered with EDC DOT in 2015 to pave 2.7 miles of Bayne Road near the Coloma community. EPA and DTSC have also paved NOA roads in EDC.

Component 3—Reducing Residential Vegetation Burning Emissions by Chipping and Composting

The El Dorado Fire Safe Council (EDC FSC) has implemented a very popular and successful chipping program for several years. This project will provide additional funding for that program to continue to serve additional residents reducing fire danger as well as PM2.5. With grant funding from the USFS and a California Climate Investments grant from CalFire, the EDC FSC has completed chipping projects at over 1,000 EDC residences. Survey data collected from participating residents indicates that were it not for the chipping program, 68% of the vegetation chipped would have been burned.

Likewise, Placer Resource Conservation District (RCD) manages a low-cost residential curbside chipper program. The TAG would provide additional funding for this program and could fund the homeowner's portion ($40/hr) to encourage greater use of the program. This program is a joint effort between RCD, PC APCD, Placer County Sheriff, CalFIRE, Placer County Fire, and Recology. In 2019, the Chipper Program serviced 2,485 locations and diverted 10,436 tons of wood waste. Chipping volume was up 4,094 tons from 2018, compared to an increase of 100 tons from 2017 to 2018.

Managed burning and disposal produce about 3% of the PM2.5 emissions in the SFNA. When wildfires occur far more PM2.5 is emitted. The 97,000 acres King Fire that occurred in El Dorado County in 2014 produced 53,000 tons of PM2.5 or roughly 8 times as much PM2.5 produced by all other sources during 2014 in the SFNA combined. Smoke from the King Fire impacted the entire SFNA. Chipping and biomass transport programs greatly reduce fuel loads, reducing wildfire danger, and prevent the creation of far more PM2.5 than wildfires emit.

PC APCD will also implement a composting project to provide bins and education to up to 200 residents living on parcels of 2 acres or less in the Todd Valley and Meadow Vista areas. PC APCD will partner with local hardware stores to order, distribute and educate residents on proper use of the bins. Residents will contribute their labor to fill and operate the bins. Air pollution benefits of chipping and composting would continue well beyond the 5 years grant period.

Component 4—Reducing Biomass Transport Emissions

The Biomass Transport Incentive (BT) TAG funds will be used to support biomass waste to energy as an alternative to open pile burning. Woody biomass wastes (small diameter stems, tops, limbs, branches, brush) are generated from forest management projects including fuel hazard reduction, defensible space clearing, agricultural operations and commercial timber harvest. Open pile burning is the most common means of disposal. Leaving unburnt biomass on-site is not an option due to fire hazard and ecological concerns. Getting to the highest value beneficial use – energy – is expensive due to collection, processing and transport costs. Cost can be > $80/Bone Dry Ton (BDT). Energy facilities typically can only pay up to $30/BDT. TAG funds will be used for the difference. Air pollution benefits include emission reductions of PM: 12 lb/BDT biomass, VOC: 10 lb/BDT, CO: 100 lb/BDT, NOx: 3 lb/BDT and CO2e: 0.4 tons/BDT.

Component 5—Reducing Mobile Agricultural Equipment Related Emissions

This project will be implemented by the YS AQMD staff and PC APCD staff in the SFNA portions of those districts. The Ag equipment replacement will reduce exposures to agriculture workers and to communities adjacent to farmlands. The Woodland, Davis and Dixon communities are surrounded by very large farming areas. The YS AQMD administers two incentive programs that obtain significant reductions in PM2.5 as well as the PM precursor NOx.

YS AQMD's "Funding Agricultural Replacement Measures for Emission Reductions" (FARMER) program provides financial incentives for growers to replace older mobile agricultural equipment with newer more efficient equipment. To date, YS AQMD has $2.71 million in projects under contract and has expended $1.37 million. Demand has been high, and YS AQMD has a substantial waiting-list of additional projects. YSAQMD is requesting $400k/year for Ag equipment ($2M total). YS AQMD administers both programs consistent with CARB guidelines for the FARMER and Carl Moyer programs, which use

a cost-effectiveness methodology limiting funding for any one tractor to a maximum of 80% of the cost: requiring the grower to contribute at least 20%.

PC APCD has administered the statewide FARMER program on behalf of the 18 air districts with the smallest Ag equipment emissions inventories in California. Being the administrator of this "shared" pool of funding, PC APCD does not partake in FARMER-projects as this would be a conflict of interest. Therefore, the TAG funding would provide a funding source for agricultural equipment replacements in Placer County in lieu of FARMER.

B. Emissions Inventory & Progress Towards Attainment

A qualitative description and quantitative data of our emissions inventory analysis for all relevant pollutants is included in the attached PM2.5 Implementation/Maintenance Plan and Re-designation Request submitted to EPA for the PM2.5 SFNA. It shows that residential combustion from fireplaces and woodstoves is the main contributor to the directly emitted PM2.5 inventory at 52% (Figure 2) and produces a significant percentage (11%) of PM2.5 precursor emissions (Figure 3). It also shows that mobile sources dominate the PM2.5 precursor inventory at 54% (Figure 1b).

As the area has recently been designated as attainment for the PM2.5 NAAQS, this project is expected to help the area continue to make progress and maintain attainment. The emission reductions of pollutants estimated to be reduced from the project are expected to significantly reduce the public health and economic impacts caused by PM2.5 exposure. In 2008 the California Air Resources Board (CARB) estimated that each year PM2.5 causes 90 premature deaths, 1,200 asthma cases, 7,900 lost work days and other health impacts annually in the Sacramento area. These impacts resulted in an estimated annual economic impact of over $3 million.

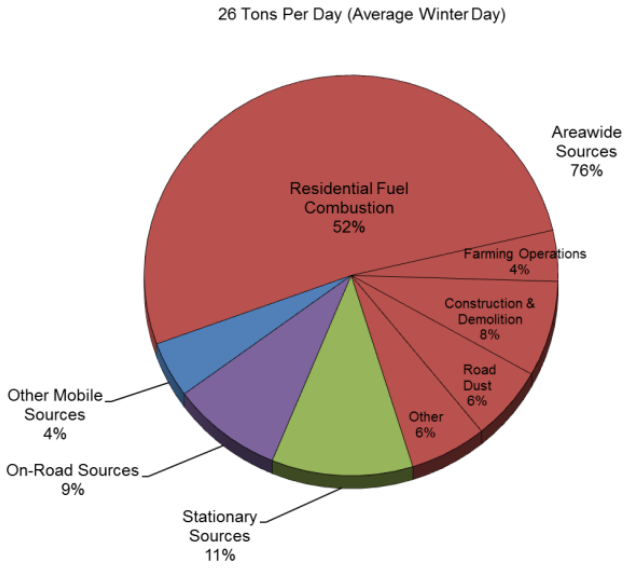


Figure 2: 2011 Direct PM2.5 Emissions

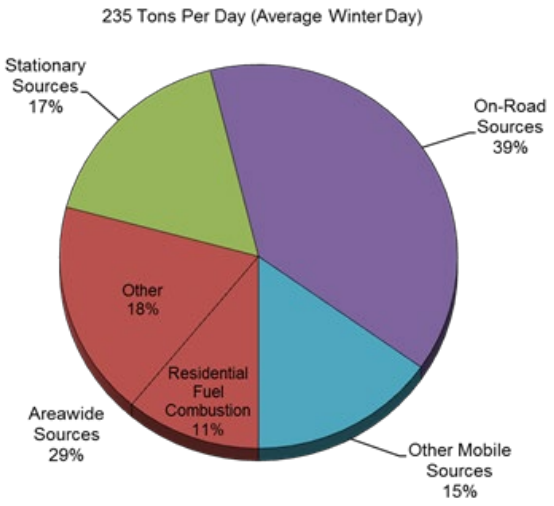


Figure 3: 2011 PM2.5 Precursor Emissions

Further detail on the Sacramento Nonattainment Area's Emission Inventory is provided in Attachment A: Emissions Inventories. Further detail on the emission reductions benefits of the proposed project components is provided in Attachment B: Emission Reduction Calculations.

C. Innovative Emission Reductions

The proposed wood stove, road paving, biomass chipping composting and Ag Equipment replacement projects are not of themselves innovative. These programs have been implemented in the past when funding and staffing was available. They are however well conceived strategies for achieving the greatest amount of emission reductions in that they will be implemented cost effectively by staff very experienced with these programs.

What is innovative is the significant amount of outreach that will be done to inform the residents of these programs and the scale of the investments that will be available. Numerous advertising mediums and venues will be frequently utilized to educate residents about the program. By frequently publishing advertisements in numerous, varied publications and promoting the program at several community events, more residents willing and able to utilize lower amounts of funding will participate. This can dramatically increase the cost effectiveness of these programs thereby creating greater emission reductions for all citizens in accordance with EPA's Strategic Plan.

The Biomass Transport Incentive (BTI) is an innovative program that has not been undertaken previously. The BTI is designed to close the gap between the cost of transporting biomass to an energy facility and the value of the energy produced. The cost gap has been the primary deterrent to converting biomass to energy.

D. Roles and Responsibilities

Component 1—Reducing Residential Wood Combustion Emissions

This project will be administered by district staff in the YSAQMD, PC APCD and EDCAQMD portions of the SFNA. EDCAQMD will implement the program in both the Placer and El Dorado portions of the SFNA. Project partners will include advertisers, installers, recycling facilities and residents.

District staff will verify household income eligibility. Installer contracts will be extended throughout the grant period. District responsibilities will include annually evaluating program participation levels and determine if the incentive amounts should be changed by increasing, decreasing or keeping them unchanged.

Component 2—Reducing Road Dust Emissions

This project will be administered by district staff in the EDCAQMD and PC APCD portions of the SFNA. EDCAQMD will partner with El Dorado County Transportation Department (EDCDOT) to double chip seal slurry unpaved roads. PC APCD will partner with Placer County Road Division to asphalt pave an unpaved road.

Component 3—Reducing Residential Vegetation Burning Emissions by Chipping and Composting

This project will be implemented by district staff in the EDCAQMD and PC APCD portions of the SFNA. El Dorado Fire Safe Council (FSC) has implemented a very popular and successful chipping program for several years. Successful composting programs have been administered by EDC Environmental Management Department. PC APCD will partner with the Placer Resource Conservation District (RCD) to provide funding for the residential curb-side chipper program.

Component 4—Reducing Biomass Transport Emissions

This project will be implemented by district staff in the PC APCD and the YSAQMD portions of the SFNA. The Placer and Yolo/Solano Districts will contract with transport contractors to subsidize transport of biomass above and beyond what is currently being transported to the energy facilities.

Component 5—Reducing Mobile Agricultural Equipment Related Emissions

This project will be implemented by YSAQMD and PC APCD staff in the SFNA. The districts currently administer both FARMER and the Carl Moyer programs consistent with guidelines developed by CARB. Since the districts employ the use of cost-effectiveness methodologies as described in the guidelines, the growers must actively partner by contributing at least 20% of the cost. The growers must also destroy the old equipment and periodically report usage to the districts.

Section 2 Community Benefits, Engagement and Partnerships

A. Community Benefits

The wood stove and chipping programs will benefit the rural communities of Auburn, Newcastle, Penryn, Loomis, Camino, Placerville, Somerset, Diamond Springs, Coloma, Garden Valley, Georgetown and Pilot Hill. These communities have many homes that utilize wood heat. They also have abundant vegetation due to higher rainfall amounts than in valley areas. During the winter wood smoke combined with smoke from outdoor vegetation burning inundates these communities. Residents frequently express concerns of respiratory health impacts by lodging complaints with districts. These programs will maximize public health benefits by working with residents to replace stoves and assist with brush clearing and chipping. These communities are disproportionately impacted due to differential proximity to exposure of various environmental hazards. This project will address an important community need by reducing exposure to local toxic air contaminants and criteria air pollutants from wood smoke.

Many residents of the region, especially those in forested areas, use woodstoves and fireplaces as a primary source of heat. For many rural residents the economic impact of being forced to switch from inexpensive wood heat to costly gas or electric heat could result in negative health impacts that more than offset the health benefit from switching to a cleaner heating device. As an example, El Dorado County has the second highest average age of all counties in the U.S. If faced with significantly higher home heating costs, seniors and others on fixed incomes could be forced to cut back on expenditures for health care, food and transportation. When home heating costs are high, low income residents keep their homes colder in the winter and that leads to higher rates of illness. Because of the higher efficiency of new EPA certified devices, less wood is needed and residents can realize significant savings.

Many rural residents are low income and there are many areas classified as low-income communities by the State of California. Widespread mountain community home fire insurance policy cancellations and replacements with costly California Fair Plan policies have created financial hardships for many moderate and low-income residents.

The road paving projects will benefit communities in the NOA areas of El Dorado town and Garden Valley. In 1986, EPA emergency response teams completed seven miles of paving projects in Garden Valley. In 2002 and 2003, the California Department of Toxic Substances Control (DTSC) conducted a study (report attached) that evaluated airborne NOA concentrations near a roadway in the Garden valley area before and after DTSC's contractor resurfaced the roadway. The study found up to a 100 folds reduction in the airborne asbestos concentrations near the road. DTSC recommended that property owners and agencies responsible for maintaining serpentine roads resurface their roads with non-NOA-containing materials. These proposed paving projects will reduce PM2.5 and also reduce airborne asbestos fibers in communities vulnerable to this environmental burden.

The Ag equipment program will benefit valley communities adjacent to farm lands and low-income agricultural workers exposed to the emissions daily. There are several Low Income and Disadvantaged Communities identified by the state of California in the Woodland, Esparto, Davis, West Sacramento, and western Placer County areas directly adjacent to agricultural lands that would benefit from Ag equipment emission reductions.

B. Community Engagement and Partnerships

Affected communities are those identified above and include many residents with greater susceptibility to adverse effects from environmental hazards due to age and proximity. El Dorado County residents have the second highest average age of all U.S. counties. Western Placer residents are susceptible to emissions from upwind urban Sacramento and Bay Area emission sources, as well as emissions from a major west coast railyard and a major interstate highway.

EDC AQMD staff have attended and conducted outreach at numerous community events. We have reached out to and presented incentive program information to many residents. We will continue to build and support partnerships with the FSC, the EDC Department of Transportation (DOT), woodstove vendors and installers. There is overwhelming community support for the wood stove program as evidenced by over 1,350 participants to date. Support for the chipping program

is evidenced by the rapid rate at which the FSC has expended existing available USFS and CalFire administered California Climate Investments (CCI) grants by performing hundreds of chipping projects including 79 in December 2019 alone. NOA continues to be a concern for many residents. In 2017, we engaged and presented NOA dust control program information to the El Dorado Hills Area Planning Advisory Committee (APAC). APAC members were very supportive of our continued efforts to reduce emissions NOA PM2.5 emissions.

PC APCD has engaged the identified Low-Income Communities in Roseville directly by public workshops and by contacting and attending neighborhood association meetings; through community-based organizations, such as Invest Health Roseville and Breathe Sacramento; and through non-governmental organizations (NGO) such as the Climate Readiness Collaborative and Valley Vision. PC APCD's ongoing partnership with Placer RCD continues to fuel the success of the residential chipping program. PC APCD has been a longtime supporter of biomass to energy projects partnering with Sierra Pacific Industries (SPI), the Sierra Nevada Conservancy, USFS, CalFire and others on pilot projects.

Section 3 Project Sustainability

Most of the proposed project components have long life expectancies and will achieve emission reductions beyond the five years grant funding period. New woodstoves easily operate 10-20 years, paved roadways will last at least 10 years, compost bins can last 10 years, agricultural equipment lasts 10-20 years or more. Once learned, homeowners chipping habits can last a lifetime. After EPA funding for this project has ended, the districts will continue efforts to reduce emissions in the area by continuing to conduct public outreach for all programs. We will extend the terms of agreements with woodstove installers and utilize state subvention, California Climate Investments and state woodstove incentive funding, when available. DMV motor vehicle emission reduction funding will be used to pave additional unpaved roadways when the projects are determined to be cost effective. Carl Moyer funding and FARMER funding may be used to replace additional Ag equipment. The Fire Safe Council and Placer RCD been awarded grants from the US Forest Service and CalFire in the past to fund their chipping program. Those sources may again be available for chipping. PC APCD continues to support biomass to energy projects through various efforts such as the development of a greenhouse gas offset protocol for forest management through selective thinning and biomass to energy generation.

Section 4 Environmental Results

A. Expected Project Outputs and Outcomes

Project Outputs

Outputs related to this activity that will be realized are qualitative, quantitative, and measurable and include:

Number of Uncertified Wood Stoves Destroyed and Replaced: The program will include a $500 to $1,500 incentive to change-out woodstoves or retrofit fireplaces, based on economic hardship. We will require the destruction of the old woodstove and will work to establish proper proof of destruction. This will ensure benefits will continue.

Number of Advertisements: The districts currently have developed materials, hold meetings/workshops, and conduct other outreach activities to implement the woodstove change-outs and fireplace retrofits. We will leverage the lessons learned from the Grant in targeting the outreach message.

Number of Training Sessions: The Program will include an outreach and educational component to ensure that households make informed decisions about how to burn and what to burn in order to maximize the efficiency of the device and minimize pollution. Approved Installers will educate woodstove applicants on proper device operation and maintenance to maximize energy efficiency and minimize pollutant emissions. Training will include best management practices for wood selection, storage and burning.

Number of Cubic Yards of Vegetation Chipped: The amount of vegetation chipped will only be limited by the amount of available funding allocated. The threats of wildfire and skyrocketing homeowners' insurance are prompting many

residents to remove excess vegetation from around their homes. Residents survey information gathered by the EDC FSC indicates that were it not for the availability of chipping, 68% of the chipped vegetation would have been open burned.

Number of Compost Bins Distributed: There will only be a finite number of compost bins (about 200) for distribution in the areas most impacted by residential outdoor burning.

Miles of Unpaved Roadways Paved: Roadways chosen for this project are those with the highest Average Daily Transport (ADT) numbers of all unpaved roads in the SFNA.

Bone Dry Tons (BDT) of Biomass Transported to Energy Facility: Amount of biomass transported and burned cleanly rather than open burned in the forest. Current Biomass facilities in the region have the capacity to accept additional quantities of biomass into their facilities to produce low-carbon renewable energy.

Number of Ag Off-road Equipment Replaced: As the destruction of old equipment will be required, emission reductions from this project will be sustainable.

Project Outcomes

478 tons of PM2.5 will be reduced annually and 2,392 tons of PM2.5 will be reduced over the lifetime of the project. Total cost per ton efficiency is $12,281/ton of PM2.5 reduced. It should be noted that because of the proposed ag equipment replacement component, there is a significant reduction in NOx (55 tons/yr, 548 tons lifetime). In addition to being a PM precursor, NOx is the main pollutant of concern for ozone formation in the SFNA. There will also be economic benefits to residents who have new home heating devices from reduced fuel purchases.

Anticipated Outputs and Outcomes	
Outputs	**Outcomes**
Replace 2,800 residential non-certified wood burning appliances stoves with Step 2 EPA certified wood stoves, pellet stoves, gas or electric home heating appliances	**Annual Woodstove Emissions Reduced = 178 tons of PM2.5, 12 tons of NOx, 333 tons of VOCs**
	Lifetime Woodstove Emissions Reduced = 1780 tons of PM2.5, 125 tons of NOx, 3328 tons of VOCs
Pave 11.3 miles/1,196,843 square feet unpaved roadways.	**Annual Roadway Emissions Reduced = 31 tons of PM2.5**
	Lifetime Roadway Emissions Reduced = 218 tons of PM2.5
Chip 1,500,000 cubic yards of residential biomass as an alternative to open burning. Distribute 200 compost bins in areas with chronic smoke complaints due to outdoor burning as an alternative to open burning.	**Annual Brush Burning/Composting Emissions Reduced = 48 tons of PM2.5, 6 tons of NOx, 66 tons of VOCs**
	Lifetime Brush Burning/Composting Emissions Reduced = 243 tons of PM2.5, 31 tons of NOx, 329 tons of VOCs
Transport 20,000 tons of biomass to biomass to energy facility	**Annual Biomass Burning Emissions Reduced = 24 tons of PM2.5, 6 tons of NOx, 20 tons of VOCs**
	Lifetime Biomass Burning Emissions Reduced = 120 tons of PM2.5, 30 tons of NOx 100 tons of VOCs
Replace 76 agricultural mobile equipment	**Annual Ag Equipment Emissions Reduced = 3 tons of PM2.5, 55 tons of NOx, 6 tons of VOCs**
	Lifetime Ag Equipment Emissions Reduced = 31 tons of PM2.5, 547 tons of NOx, 57 tons of VOCs
Lifetime Emission Reduction Totals	**2,392 tons of PM2.5, 733 tons of NOx, 3,814 tons of VOCs**

B. Performance Measures

Performance Measures	
Project Component	**Performance Measure**
Woodstove Replacement (WR). Replace 2,800(+) residential non-certified wood burning appliances with cleaner burning devices.	**Overseeing:** Woodstove installation contractors to ensure new stoves are Step 2 compliant. **Tracking:** Pre-approval of applications for eligibility. Applicant obtained Building Permit must be finaled. **Reporting:** Quarterly reports of no. & location of changeouts, incentive amount, incentive level, type of device, replaced device, evidence of destruction, installation date, finaled BP, verification of training, jobs created, TAG funding spent. **Measuring:** Emission reductions calculated by number of woodstoves replaced.
Unpaved Road Paving (URP). Pave 11.3 miles of unpaved roadways.	**Overseeing:** County public works department and subcontractors for paving. **Tracking:** Subcontractor obtains dust plan through District. **Reporting:** County provides no. of miles paved, ADT counts quarterly. **Measuring:** Emission reductions calculated by ADT & VMT emission factors between unpaved & paved roadways.
Biomass Chipping and Composting (BCC). Chip 1,500,000 cubic yards of residential biomass as an alternative to open burning. Distribute 200 compost bins.	**Overseeing:** Third party chippers and Placer RCD. Hardware stores distributing composters. **Tracking:** Chippers and Placer RCD to track chipping tonnage. Hardware stores to track composter distribution, limit to Todd Valley & Meadow Vista. **Reporting:** Quarterly reports of chipping tonnage transport, number of trips/routes. Quarterly reports of compost bin distribution. **Measuring:** Emission reductions calculated by tonnage of chipping vs biomass open burned and by amount of estimated composting vs open burning.
Biomass Transport (BT). Transport 20,000 tons of biomass to a biomass to energy facility as an alternative to open burning.	**Overseeing:** Third party transporters and Rio Bravo. **Tracking:** Transporters and Rio Bravo to track biomass tonnage. **Reporting:** Quarterly reports of biomass tonnage transport, number of trips. **Measuring:** Emission reductions calculated by tonnage of biomass used for energy vs biomass open burned.
Agriculture Mobile Equipment Replacement (AMER). Replace 76 agricultural mobile equipment with cleaner equipment.	**Overseeing:** Ag equipment retailers and ag equipment dismantlers. **Tracking:** District to establish eligibility, track old ag destruction, new ag replacement. **Reporting:** Ag equipment replacement reported quarterly in accordance with Carl Moyer guidelines. **Measuring:** Emission reductions calculated using Carl Moyer calculations between old ag equipment and new ag equipment emissions over life of the project.

C. Performance Plan

Districts will track and measure progress towards achieving project outputs and outcomes for all components by recording projects completed in all component categories as identified in the Performance Measures matrix above. Short term results include the completion of contracts and MOUs with project partners (wood stove installers, transportation agencies, fire safe councils, farmers, Ag equipment dismantlers, etc.). Program advertisements will be developed and widely distributed. Long term results include numbers of stoves and tractors replaced, chipping jobs completed, miles of roadways paved and the number of compost bins deployed. Progress will be measured by comparing quarterly reporting criteria identified in the Performance Measures matrix with the total projected output of that respective project component with reference to the amount of time remaining in the project period.

This approach will use monetary and staff time resources efficiently and effectively by repeatedly conducting very broad, outreach and education. By conducting frequent advertising, residents will learn of these programs and participation levels will be high. We will not rely on wood stove and tractor vendors to inform customers of these programs as customers are already in the market for new equipment. We will mass market these programs to increase participation. When many are aware of the programs, incentive and grant amounts can be kept low making the programs much more cost effective. When many are aware, many more are willing to participate because there are more residents that are in the position to and can afford to contribute the costs above the incentive and grant amounts. The more participants, the more effective these programs will be and the greater are the emission reductions and health benefits for all.

Air Districts will retain the records for at least three years after the TAG funding agreement with SMAQMD has ended. All records shall be stored in secured and safe storage facilities that maintains confidentiality and provides fire and natural disaster protection.

D. Timeline and Milestones

The projects timeline is shown below. The projects will be implemented throughout the grant term. But district staff and partners efforts will focus on conducting more of the woodstove change-outs, fireplace retrofits, chipping, paving, biomass transport and Ag replacement early in the term to maximize the benefit from the reductions.

Project	2020	2021		2022		2023		2024		2025
	Aug-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Aug
Woodstove Replacement										
A. Advertising/Community Engagement										
B. Eligibility Determination										
C. Replacements										
Road Paving										
A. Design										
B. Construction										
Chipping										
A. Contracting										
B. Outreach/Community Engagement										
C. Oversight										
Biomass Composting and Transport										
A. Contracting										
B. Outreach/Community Engagement										
C. Compost Bin Distribution										
D. Oversight										
Ag Equipment Replacement										
A. Solicitation										
B. Evaluation										
C. Contracting										

Section 5 Programmatic Capability and Past Performance

A. & B. Management, Completion and Reporting Requirements

Recent federally funded assistance agreements that are similar in size, scope and relevance to this project include:

1) Congestion Management Air Quality grant issued to EDC AQMD for Electric Vehicle Supply Equipment. This agreement funded electric vehicle charging stations for County owned plug in vehicles at County offices.

C. Staff Expertise

The SFNA districts have extensive experience administering woodstove change-out programs. PC APCD has replaced 470 old stoves since 2009. YS AQMD has replaced 77 old stoves since 2018. ED AQMD has replaced 1,350 old stoves in the last 5 years. Many of these replacements have been funded with California Climate Investment funds and with State Subvention funding. However, the State has no plans to continue funding beyond the current allocation which is expected to be expended by the end of CY 2020. The primary limitation to replacing more uncertified stoves is funding.

The YS AQMD Woodsmoke Reduction Program provides a financial incentive to replace old, inefficient wood-burning appliances with new wood, pellet, gas or electric appliances. The program has been in place for one year and has replaced 48 wood-burning appliances with an additional 29 appliances waiting to be replaced. Based on the demand observed so far, the District anticipates that annual demand would equal approximately $75,000 in wood-burning appliance replacements. This experience has enabled the districts to streamline the implementation process.

Placer County Roads Division and EDC DOT staff have conducted many paving projects. All district staff have implemented FARMER Ag equipment replacement and Carl Moyer equipment replacement programs. PC APCD staff have extensive knowledge concerning biomass to energy projects and the emission reduction benefits of biomass to energy over open pile burning. Placer APCD co-authored the technical paper "Emission Reductions from Woody Biomass Waste for Energy as an Alternative to Open Burning" in the *Journal of the Air & Waste Management Association* (Jan 2011). This paper established a framework to quantify air emissions reductions for projects that alternatively utilize biomass waste as fuel for energy production. PC APCD has been a long-time promoter, funder, and supporter of chipper programs including the current PC RCD program.

Section 6 Leveraged Funding

The Sacramento region districts will leverage additional funds and resources to the maximum extent practicable to support the proposed project activities. Contributions from the air districts, the county transportation departments, the fire safe councils, resource conservation district, farmers, residents and others will ensure project success. The districts will contribute the costs of the fringe benefits earned by staff for the time spent working on the TAG program.

Based upon claim information from Placer and EDC residents to EDC AQMD during the State funded woodstove incentive program, the average total amount for 181 recent projects was $4,190. Under this TAG program, participating residents in Placer and EDC will receive and average incentive of $1,559 and contribute an average of $3,031 to each project. Yolo Solano residents will receive and average incentive of $2,225 and contribute an average of $1,965 to each project. The

total SFNA residents' contribution of $7,977,500 will be leveraged to achieve the emission reductions. EDC AQMD will also use $119,800 of State Subvention funding for an additional 200 projects during this period.

Based upon claim information submitted to PC APCD (administering agency for the FARMER program), the average total amount for 57 recent Ag equipment projects was $78,516. Under this TAG program, participating residents in PC APCD and YS AQMD will receive an average incentive of $78,516 and contribute an average of $19,629 to each project. The total SFNA farmers' contribution of $1,491,804 ($19,629 x 76 projects) will be leveraged to achieve the emission reductions.

The EDC Fire Safe Council tracked total costs incurred by residents that participated in the USFS and CCI/Cal Fire chipping programs. On average the costs for clearing and vegetation consolidation was $229 per job. The total SFNA residents' contribution of $2,986,618 will be leveraged to achieve the emission reductions.

The EDC Department of Transportation and Placer Roads Division will contribute the cost of all road preparation work that must be done prior to the paving. The preparation work will include design, grading, brushing, ditching and installing culverts. For the entire 11.3 miles of roadways to be paved, the cost of preparation will be $1,037,031.

The total leveraged amount is $13,872,201 or 47% of the total project cost.

Section 7 Budget

A. Expenditure of Awarded Funding

District staff will employ an approach, procedures and controls to ensure the awarded grant funds are expended in a timely and efficient manner. (As discussed above in Section 5, "Programmatic Capability and Past Performance.")

If in the later years of the grant performance period the program needs are determined to be greater in one district than another, project funds may be reallocated to the areas of higher need. This will help to ensure maximum emission reductions from the awarded funding. Likewise, if grant funding demand is lower in a project component and higher in another, grant funds will be shifted to the higher demand component to ensure all grant funds are expended within 5 years to achieve the greatest emission reductions possible.

B. Reasonableness of Budget

The proposed costs are all based on existing program costs, such as the woodstove, chipping, and Ag replacement components, or on known costs to construct or purchase, such as the paving and compost bin projects. Estimates of staff labor devoted to these tasks are derived from existing program budgets. Grants funding provided by the State of California to districts typically provide for administration costs of up to 12.5% of total grant funding for small districts and 6.5% for large districts. This project budget includes only 8.8% of EPA TAG funding for staff time by the air districts. The additional district staff fringe benefits and contributions by the residents, the transportation departments, the Fire Safe Council and Farmers will be attributed to the non-federal Cost Share.

C. Budget Detail

Line Item & Itemized Cost					EPA Funding	Non-Federal Cost Share
PERSONNEL	**Hourly Rate**	**Hours per Week**	**Number of Weeks**			
EDC AQMD Staff Time on Components 1, 2 & 3						
Air Quality Technician	$ 23.87	8	240	$	45,830	
Air Quality Administrative Analyst	$ 42.69	6	240	$	61,474	
Air Quality Specialist	$ 41.05	8	240	$	78,816	
Air Quality Engineer	$ 45.95	8	240	$	88,224	
Senior Air Quality Engineer	$ 52.85	6	240	$	76,104	
Air Pollution Control Officer	$ 75.77	3	240	$	54,554	
EDC AQMD Subtotal				$	405,002	$ -
Placer APCD Staff Time on Components 1, 2 , 3, 4 & 5	**Hourly Rate**	**Hours per Week**	**Number of Weeks**			
Account Clerk	$ 27.21	4	240	$	26,122	
Administrative Technician	$ 33.08	4	240	$	31,757	
IT Technician	$ 41.01	4	240	$	39,370	
Senior Administrative Services Officer	$ 53.59	6	240	$	77,170	
AQ Specialist	$ 50.14	12	240	$	144,403	
Senior AQ Planner	$ 56.59	4	240	$	54,326	
Senior Air Quality Engineer	$ 52.66	4	240	$	50,554	
Deputy APCO	$ 65.06	6	240	$	93,686	
Air Pollution Control Officer	$ 89.86	2	240	$	43,133	
Placer APCD Subtotal				$	560,520	$ -
Yolo Solano AQMD Staff Time on Components 1 & 5	**Hourly Rate**	**Hours per Week**	**Number of Weeks**			
Administrative Assistant	$ 23.31	6	240	$	33,566	
Associate Planner	$ 45.32	14	240	$	152,275	
Planning Manager	$ 55.29	8	240	$	106,157	
Deputy APCO	$ 73.79	2	240	$	35,419	
Yolo Solano AQMD Subtotal				$	327,418	$ -
Sacramento AQMD Staff Time on Administration	**Hourly Rate**	**Hours per Week**	**Number of Weeks**			
Fiscal Assistant	$ 30.81	0.37	240	$	2,736	
Sr. Accountant	$ 50.29	1.6	240	$	19,311	
Controller	$ 75.96	0.53	240	$	9,662	
Division Manager	$ 87.32	0.66	240	$	13,831	
District Counsel	$ 119.14	0.05	240	$	1,430	
Admin Specialist	$ 46.55	0.05	240	$	559	
Legal Assistant	$ 38.31	0.02	240	$	184	
APCO	$ 105.12	0.06	240	$	1,514	
Sacramento AQMD Subtotal				$	49,227	$ -
TOTAL PERSONNEL				$	1,342,167	$ -
Fringe Benefits	**Total Personnel**	**20%**	**40%**			
Fringe Benefits EDC, Placer, YoloSolano 20% (FICA, Health, Life Ins, Workers Comp, Retirement)	$ 1,292,940	0.2				$ 258,588
Fringe Benefits Sacramento 40%	$ 49,227		0.4	$	19,691	
TOTAL FRINGE BENEFITS				$	-	$ 258,588
Supplies	**Printing Cost**	**Mailing Cost**	**Number of Fliers**			
Direct Mail Fliers for Woodstove and Chipping Components	$ 0.34	$ 0.50	3,000	$	2,520	
TOTAL SUPPLIES				$	2,520	$ -
CONTRACTUAL						
Component 1 Woodstove Incentive (WR)	**Incentive Amount**	**Number of Incentives**				
Incentives for disadvantaged, low income & low income area residents in El Dorado & Placer	$ 2,000	1,000		$	2,000,000	
Incentive, standard amount available to all residents in El Dorado and Placer	$ 599	1,500		$	898,500	
Incentive standard amount contributed by EDC with State Subvention funds	$ 599	200				$ 119,800
Incentives for disadvantaged, low income and low income area residents in Yolo Solano	$ 3,500	100		$	350,000	
Incentive, standard amount available to all residents in Yolo Solano	$ 1,000	104		$	104,000	
Print, online and other forms of advertising				$	50,000	
	Participants' Contribution	**Number of Incentives**				
Incentive Program Participants' Share of Cost of New heating Devices Placer & EDC (ave total replacement cost $4190 - avg incentive $1159)	$ 3,031	2,500				$ 7,577,500
Incentive Program Participants' Share of Cost of New heating Devices Yolo Solano (ave total replacement cost $4190 - avg incentive $2225)	$ 1,965	204				$ 400,860
Subtotal Woodstove Incentives				$	3,402,500	$ 8,098,160
Component 2 Unpaved Road Paving (UPR)	**Cost per Square Foot of Roadway**	**Square Feet of Roadway Prepped**	**Square Feet of Roadway Paved**			
EDC Road prep, planning, grading, roadbase, culverts by EDC Dept of Trans - Leveraged Funding	$ 0.90	985,643				$ 887,079
Road paving with double chip seal by EDC Department of Transportation	$ 0.80		985,643	$	788,514	
Placer Road prep, roadbase, grading, culverts by Placer Roads Division - Leveraged Funding	$ 0.71	211,200				$ 149,952
Placer: Road paving with asphalt by Placer Roads Division	$ 3.78		211,200	$	798,336	
Subtotal Road Paving				$	1,586,850	$ 1,037,031
Component 3 Biomass Chipping and Composting (BCC)	**Amount per Cubic Yard**	**Cubic Yards**				
EDC Fire Safe Council and Placer RCD cost to chip vegetation	$ 1.42	1,500,000		$	2,130,000	
	Cost per Job	**Number of Jobs**				
Residents' contribution match ($ paid to contractors for clearing/ stacking brush, and value of residents' in kind labor)	$ 229	13,042				$ 2,986,618
Print, online and other forms of advertising				$	25,000.00	
	Cost per Composting Bin	**Number of Bins**				
Compost Bins	$ 244	200		$	48,800	
Subtotal Chipping				$	2,203,800	$ 2,986,618
Component 4 Biomass Transport (BT)	**Cost per ton**	**Tons Transported**				
Transport of Biomass to Composting and Treatment Facilities	$ 50	20,000		$	1,000,000.00	
Subtotal Biomass Transport				$	1,000,000.00	0
Component 5 Ag Mobile Equipment Replacements (AMER)	**Average Cost per Ag Equipment**	**Number of Units Replaced**				
Grant amount paid to farmers to replace Ag Equipment	$ 78,516	76		$	5,967,216	
Additional amount paid by farmers to replace old Ag Equipment	$ 19,629	76				$ 1,491,804
Subtotal Ag Equipment Replacement				$	5,967,216	$ 1,491,804
TOTAL CONTRACTUAL				$	14,160,366	$ 13,613,613
Indirect Charges	**Rate**	**Hours**				
SMAQMD Federal Negotiated Cost Rate						
TOTAL INDIRECT						
TOTAL FUNDING				$	15,505,053	$ 13,872,201
			% staff funding		8.78%	
TOTAL PROJECT COST						$ 29,377,254

Section 8 Attachments

Attachment A. Emission Inventories
Attachment B. Emission Reduction Calculations
Attachment C. Leveraged Funds Cost Share Commitment Letters
Attachment D. Biographical Sketches
Attachment E. Partnership Letters
Attachment F. California Air Resources Board Woodstove Program Guidance
Attachment G. California Air Resources Board FARMER Program Guidelines
Attachment H. Budget Detail

ATTACHMENT A – EMISSION INVENTORIES

PM2.5 IMPLEMENTATION/MAINTENANCE PLAN AND REDESIGNATION REQUEST

FOR SACRAMENTO PM2.5 NONATTAINMENT AREA

(WITH ERRATA SHEET INCOPORATED ON FEBRUARY 5, 2014)
October 24, 2013

4 Emissions Inventory

- 4.1 Introduction to Emissions Inventory

An emissions inventory is an accounting of the amount of air pollutants discharged into the atmosphere of a geographical area during a given time period. The maintenance plan must require the submittal of attainment year (2011), interim year (2017) and maintenance year (2024) emissions inventories of directly emitted PM2.5 and its precursors[21]. Year 2024 is designated as the maintenance plan's final year inventory based on the assumption that the United States Environmental Protection Agency (EPA) will approve the Region's re-designation request in 2014 and the requirement under Clean Air Act (CAA) Section 175A to demonstrate maintenance of the National Ambient Air Quality Standards (NAAQS) for at least 10 years. The 2017 interim year inventory is used to demonstrate that the emissions in the area are not expected to exceed the attainment year inventory between the attainment year and the final year of the maintenance plan. These three sets of emissions inventories are used to determine whether the Sacramento Federal PM2.5 Nonattainment Area (SFNA-PM2.5) will remain in attainment through the final year, 2024, despite growth in the area.

The emissions inventory undergoes continuous updating to improve its accuracy. The 2011, 2017 and 2024 emissions inventories use the latest planning assumptions and emissions data in California Air Resources Board's (CARB's) PM2.5 SIP planning projections model, California Emission Projection Analysis Model (CEPAM). The emission inventories are presented in tons per day for an average winter day. Future year inventories are forecast using latest socio-economic growth indicators and applying the emission reduction benefits from adopted control strategies.

The emission inventories include emissions for the SFNA-PM2.5, which encompasses all of Sacramento County, the eastern portion of Yolo County, the western portions of El Dorado and Placer counties, and the northeast portion of Solano County. Figure 2.1 in Chapter 2 contains the map of the SFNA-PM2.5.

This chapter begins with a discussion of the emissions inventory by different air pollutant source categories for the SFNA-PM2.5. Directly emitted PM2.5, and PM2.5 precursors of NO_X (Nitrogen Oxides), SO_2 (Sulfur Dioxide), VOC (Volatile Organic Compounds), and NH_3 (Ammonia) emissions, in tons per day for an average winter day, are then summarized for 2011, 2017 and 2024 in tabular and graphical formats. This is followed by a section analyzing the emissions inventory forecasts and emissions inventory maintenance demonstration. Final sections of this chapter include a discussion of emission reduction credits (ERCs), which are included in the emissions inventory forecasts to ensure that the potential use of ERCs is reflected in the maintenance year inventory. More detailed information and emissions inventory tables are provided in Appendix B – Emissions Inventory.

[21] CAA Sections 172(c)(3) and175A, and 40 CFR 51.1008

4.2 Emissions Inventory Requirements

Emissions are updated as part of the overall requirement for “plan revisions to include a comprehensive, accurate, current inventory of actual emissions from all sources of the relevant pollutants” under CAA sections 172(c)(3), 40 CFR 51 Subpart A, and 40 CFR 51.1008.

4.3 Precursors to PM2.5

In accordance with SIP emission inventory requirements under 40 CFR part 51 subpart A, CAA Section 172(c)(3) and 40 CFR 51.1008, this PM2.5 plan contains an emissions inventory for total directly emitted PM2.5, and all precursors of PM2.5. Emissions of NO_X, SO_2, VOC and NH_3 are precursors of PM2.5 because these pollutants can undergo chemical reactions in the atmosphere to form secondary PM2.5, such as ammonium nitrate and ammonium sulfate.

4.4 Emissions Inventory Source Categories

Due to the large number and wide variety of emission processes and sources, a hierarchical system of emission inventory categories was developed for more efficient use of the data. The anthropogenic (man-made) emissions inventory is divided into four broad categories: stationary sources, area-wide sources, on-road mobile sources, and other mobile sources. Each of these major categories is subdivided into more descriptive subcategory sources. Each of these subcategories is further defined into more specific emission processes.

4.4.1 Stationary Sources

The stationary source category of the emissions inventory includes non-mobile, fixed sources of air pollution. They are comprised of individual, industrial, manufacturing, and commercial facilities called “point sources”. A point source which emits 10 tons or more per year of any criteria pollutant is specifically included as a facility in the inventory. Small facilities such as gas stations, dry cleaners, and concrete batch plants are grouped together under aggregated point source categories. The more descriptive subcategories include fuel combustion (e.g. power plant gas turbines), waste disposal (e.g. landfills), petroleum production and marketing, and industrial processes (e.g. rock crushing plant). The process and emissions data reported by industrial facility operators are used to calculate emissions from point sources.

4.4.2 Area-Wide Sources

The area-wide sources inventory category includes aggregated emissions data from processes that are individually small and widespread or not well-defined stationary sources. The area-wide subcategories include residential wood combustion, farming operations, construction and demolition activities, and road dust. Emissions from these

sources are calculated from fuel usage, product sales, population, employment data, and other parameters for a wide range of activities that generate air pollution across the Sacramento region.

4.4.3 On-Road Motor Vehicles

The on-road motor vehicles inventory category consists of trucks, automobiles, buses, and motorcycles. EMFAC (EMission FACtor) is the California model for estimating emissions from on-road motor vehicles operating in California. It is built on decades of vehicle testing and analysis. It uses travel activity data from metropolitan planning organizations, vehicle

registration data from the Department of Motor Vehicles (DMV), and data from the Smog Check program.

Motor Vehicle Emissions Model, EMFAC2011

CARB has continued to update and improve its EMFAC on-road motor vehicle emissions model. CARB's latest model, EMFAC2011, was released in September 2011. EMFAC2011 model improvements include:

- The latest information on vehicle populations and miles traveled in California.
- The impacts of recently adopted diesel regulations including the Truck and Bus Rule and other diesel truck fleet rules; the Pavley Clean Car Standard, and the Low Carbon Fuel Standard.
- The latest emissions inventory methods for heavy duty trucks and buses.

EMFAC2011 software and detailed information on the vehicle emission model can be found on the CARB website: http://www.arb.ca.gov/msei/modeling.htm.

Vehicle Activity Data

On-road motor vehicle emission estimates were developed using the latest available transportation data and California's EMFAC2011 model. The forecasted vehicle miles traveled (VMT) and speed distributions used in this plan are based on the Sacramento region's Metropolitan Transportation Plan/Sustainable Communities Strategy 2035 (MTP/SCS 2035) (Abraham, 2012a, Crow, 2012, and Abraham, 2012b), which was adopted by the Sacramento Area Council of Governments (SACOG) on April 19, 2012. Vehicle activity data for Solano County, however, is based on the Plan Bay Area Preferred Land Use Scenario/Transportation Investment Strategy (May 11, 2012) and was provided by the San Francisco Bay Area Metropolitan Transportation Commission (MTC) to SACOG (Brazil, 2012)

4.4.4 Other Mobile Sources

The emission inventory category for other mobile sources includes aircraft, trains, boats, and off-road vehicles and equipment used for construction, farming, commercial,

industrial, and recreational activities. The other mobile source categories are estimated by category specific methods and inventory models that are developed for specific regulatory support projects. The diesel equipment categories using category specific method include: In-Use Off-Road Equipment (Construction, Industrial, Airport Ground Support, and Oil Drilling); Cargo Handling Equipment; In-Use Mobile Agricultural Equipment; Locomotives; Transport Refrigeration Units; Commercial Harbor Craft; Ocean Going Vessels; and Stationary Commercial Engines. The OFFROAD2007 emission model is used for estimating emissions for equipment categories that have not yet been replaced within a category specific method. In general, emissions are calculated by using estimated equipment population, engine size and load, usage activity, and emissions factors.

Off-road inventory improvements include:

- Updated estimates of equipment population,
- New data from 2009 academic studies and reducing certain load factors by 33% at engine manufacturers recommendation, and
- Decreases in construction activity and revised growth projections due to the recent economic recession.

More detailed information on the latest off-road motor vehicle emissions inventory can be found on the CARB website: http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles.

4.5 Attainment Year Emissions and Forecasts

4.5.1 Anthropogenic Emissions Tables by Source Category

In the SFNA-PM2.5, peak concentrations typically occur under late fall and winter weather conditions when temperature inversions and low wind speeds trap and concentrate PM2.5 emissions near the ground, cooler temperature and high humidity increase the secondary formation of particulates, and residential wood burning increases. Therefore, the emissions inventories for directly emitted PM2.5 and its precursors of NO_X, SO_2, VOC, and NH_3 are compiled for an average winter day, which are the average daily emissions in the winter planning season of November to April.

The following tables (Tables 4.1, 4.2 and 4.3) show the anthropogenic emissions inventory of directly emitted PM2.5, and its precursors of NO_X, SO_2, VOC and NH_3 by source categories for the SFNA-PM2.5. The emissions inventory is shown for an average winter day in units of tons per day. Inventories except on-road vehicles were obtained using CEPAM: NORCAL 2012 PM2.5 SIP Baseline Emission Projections for the attainment year 2011, the interim year 2017, and the maintenance plan year 2024[22]. On-road vehicle inventories for these years were provided by CARB (Taylor, 2012b), (Taylor, 2012c).

Targeted emission reduction benefits from SMAQMD Rule 421, Mandatory Episodic Curtailment of Wood and Other Solid Fuel Burning, on directly emitted PM2.5 inventory are not well represented in a winter average inventory scenario. During a poor air quality

day, Rule 421 is expected to reduce an additional 5 tons per day of SFNA PM2.5 emissions in 2024 or an additional reduction of 20% in the 2024 SFNA directly emitted PM2.5 inventory.

[22] CARB. *CEPAM. Section a1 - Emission Projections With External Adjustments*. Web 11 October, 2012
<http://www.arb.ca.gov/app/emsinv/2012pm25sip/norcal2012pm25sip/

Table 4.1 Average Winter Day Directly Emitted PM2.5 Emissions (tons per day)
Sacramento Federal PM2.5 Nonattainment Area

CATEGORY	PM2.5		
	2011	2017	2024
TOTAL EMISSIONS	**26**	**27**	**26**
STATIONARY	2.8	3.4	3.7
AREAWIDE	19.6	20.4	20.2
ON-ROAD MOTOR VEHICLES	2.2	1.7	1.6
OTHER MOBILE	1.1	1.0	0.7
STATIONARY			
Fuel Combustion	1.2	1.3	1.3
Industrial Processes	1.6	2.0	2.3
Other	0.0	0.1	0.1
AREAWIDE			
Residential Fuel Combustion	13.4	13.7	13.5
Farming Operations	1.1	1.1	1.1
Construction and Demolition	2.0	2.2	2.2
Paved Road Dust	1.2	1.3	1.4
Unpaved Road Dust	0.4	0.4	0.4

Managed Burning and Disposal	0.7	0.8	0.7
Cooking	0.6	0.7	0.7
Other	0.2	0.2	0.2
ON-ROAD MOTOR VEHICLES			
Light/Medium-Duty Vehicle	1.2	1.1	1.1
Heavy-Duty Trucks	0.9	0.5	0.4
Other	0.1	0.1	0.1
OTHER MOBILE			
Aircraft	0.1	0.1	0.1
Trains	0.1	0.1	0.1
Boats/Rec Vehicles	0.2	0.2	0.1
Off-Road Equipment	0.4	0.4	0.3
Farm Equipment	0.3	0.2	0.1
Fuel Storage & Handling	0.0	0.0	0.0

Data Source: Except for on-road, CARB CEPAM: NORCAL 2012 PM2.5 SIP Baseline Emission Projections, Section a1 - Emission Projections with External Adjustments, downloaded on October 11, 2012. On-road emissions include CARB external adjustments and are based on emissions generated by SACOG using EMFAC2011 and SACOG MTP/SCS2035 vehicle activity forecasts. ERCs plus additional adjustments from Tables B5.1 and B5.2 are included in the table. The Motor Vehicle Emission Budgets (MVEB) includes a safety margin for PM2.5 that is not reflected in this table. The total emissions are rounded to nearest integer.

Table 4.2 Average Winter Day PM2.5 Precursor Emissions (tons per day) Sacramento Federal PM2.5 Nonattainment Area

CATEGORY	NO_X			SO_2		
	2011	2017	2024	2011	2017	2024
TOTAL EMISSIONS	**100**	**79**	**60**	**2**	**2**	**2**
STATIONARY	10.7	12.4	12.6	0.6	1.0	1.0
AREAWIDE	7.2	8.3	8.3	0.7	0.8	0.8
ON-ROAD MOTOR	60.3	37.1	22.1	0.3	0.3	0.4
OTHER MOBILE	21.3	20.7	16.8	0.2	0.2	0.2
STATIONARY						
Fuel Combustion	10.1	11.6	11.7	0.4	0.7	0.7
Industrial Processes	0.4	0.6	0.7	0.1	0.2	0.2
Other	0.2	0.2	0.2	0.1	0.1	0.1
AREAWIDE						
Residential Fuel	6.8	7.8	7.8	0.6	0.7	0.7
Managed Burning and Disposal	0.4	0.5	0.5	0.1	0.1	0.1
Consumer Products	0.0	0.0	0.0	0.0	0.0	0.0

Architectural Coatings	0.0	0.0	0.0	0.0	0.0	0.0
Pesticides/Fertilizers	0.0	0.0	0.0	0.0	0.0	0.0
Farming Operations	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0
ON-ROAD MOTOR VEHICLES						
Light/Medium-Duty Vehicle	23.3	12.3	7.1	0.2	0.2	0.3
Heavy-Duty Trucks	33.2	21.7	12.5	0.1	0.1	0.1
Other	3.8	3.1	2.5	0.0	0.0	0.0
OTHER MOBILE						
Aircraft	2.3	2.8	3.0	0.2	0.2	0.2
Trains	5.9	6.2	5.6	0.0	0.0	0.0
Boats/Rec Vehicles	2.1	1.6	1.5	0.0	0.0	0.0
Off-Road Equipment	6.0	6.9	4.9	0.0	0.0	0.0
Farm Equipment	5.0	3.2	1.8	0.0	0.0	0.0
Fuel Storage & Handling	0.0	0.0	0.0	0.0	0.0	0.0

Data Source: Except for on-road, CARB CEPAM: NORCAL 2012 PM2.5 SIP Baseline Emission Projections, Section a1 - Emission Projections with External Adjustments, downloaded on October 11, 2012. On-road emissions include CARB external adjustments and are based on emissions generated by SACOG using EMFAC2011 and SACOG MTP/SCS2035 vehicle activity forecasts. ERCs plus additional adjustments from Tables B5.1 and B5.2 are included in the table. The Motor Vehicle Emission Budgets (MVEB) includes a safety margin for NO_X that is not reflected in this table. The total emissions are rounded to nearest integer.

Table 4.3 Average Winter Day PM2.5 Precursor Emissions (tons per day) Sacramento Federal PM2.5 Nonattainment Area

CATEGORY	VOC			NH_3		
	2011	2017	2024	2011	2017	2024
TOTAL EMISSIONS	**106**	**97**	**94**	**27**	**27**	**28**
STATIONARY	23.1	26.3	27.8	5.5	6.0	6.3
AREAWIDE	41.4	44.3	45.4	18.9	19.1	19.3
ON-ROAD MOTOR	27.4	14.4	10.8	2.8	2.3	2.1
OTHER MOBILE	14.2	11.6	10.2	0.0	0.0	0.0
STATIONARY						
Fuel Combustion	1.3	1.3	1.3	0.5	0.5	0.5
Industrial Processes	7.5	8.4	9.3	0.0	0.0	0.0
Other	14.3	16.6	17.2	5.0	5.5	5.8
AREAWIDE						
Residential Fuel	17.6	18.5	18.1	0.8	0.8	0.8

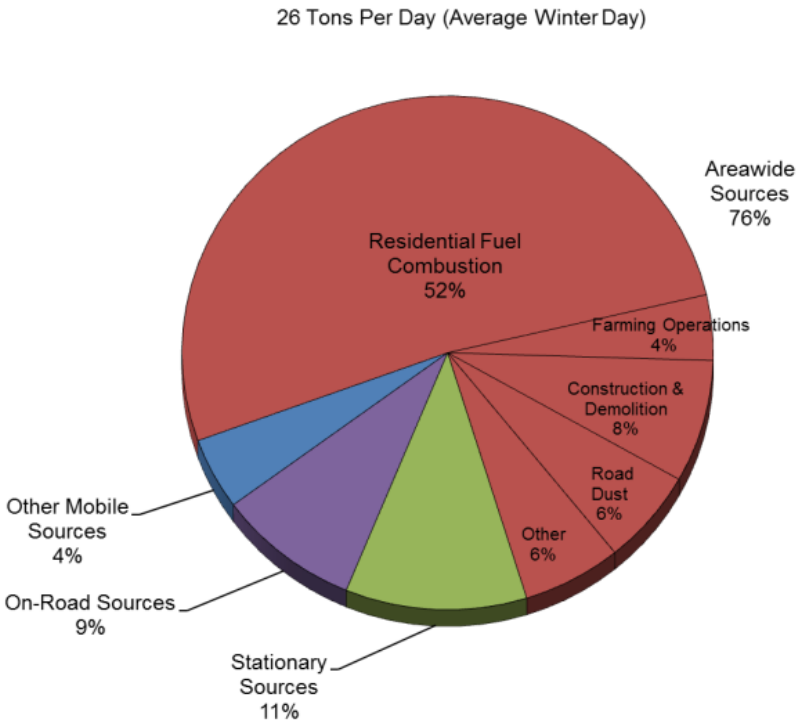
Managed Burning and Disposal	0.6	0.7	0.6	0.1	0.1	0.1
Consumer Products	12.4	13.0	14.0	0.0	0.0	0.0
Architectural Coatings	5.9	6.8	7.5	0.0	0.0	0.0
Pesticides/Fertilizers	1.1	1.2	1.1	7.1	6.9	6.7
Farming Operations	2.8	3.0	3.0	7.1	7.1	7.1
Other	1.0	1.1	1.1	3.8	4.2	4.6
ON-ROAD MOTOR VEHICLES						
Light/Medium-Duty Vehicle	20.2	9.3	6.4	2.5	2.0	1.9
Heavy-Duty Trucks	4.6	3.0	2.3	0.3	0.3	0.2
Other	2.6	2.1	2.1	0.0	0.0	0.0
OTHER MOBILE						
Aircraft	0.6	0.6	0.6	0.0	0.0	0.0
Trains	0.4	0.3	0.2	0.0	0.0	0.0
Boats/Rec Vehicles	5.0	4.1	3.5	0.0	0.0	0.0
Off-Road Equipment	6.1	5.2	4.8	0.0	0.0	0.0
Farm Equipment	1.0	0.6	0.4	0.0	0.0	0.0
Fuel Storage & Handling	1.1	0.8	0.7	0.0	0.0	0.0

Data Source: Except for on-road, CARB CEPAM: NORCAL 2012 PM2.5 SIP Baseline Emission Projections, Section a1 - Emission Projections with External Adjustments, downloaded on October 11, 2012. On-road emissions include CARB external adjustments and are based on emissions generated by SACOG using EMFAC2011 and SACOG MTP/SCS2035 vehicle activity forecasts. ERCs plus additional adjustments from Tables B5.1 and B5.2 are included in the table. The total emissions are rounded to nearest integer. The total emissions are rounded to nearest integer.

4.5.2 2011 Attainment Year Emissions Distribution

Figure 4.1 shows the 2011 directly emitted PM2.5 emission inventory categories as a percentage of the total inventory for SFNA-PM2.5. Areawide sources make up 76% of directly emitted PM2.5 emissions. At 52%, the Residential Fuel Combustion category of areawide sources dominates the PM2.5 inventory. Other areawide sources, which include Construction & Demolition, Road Dust, Farming Operation and Other categories, contribute 24%. Mobile sources and stationary sources contribute 13% and 11%, respectively.

Figure 4.1 2011 Directly Emitted PM2.5 Emissions Distribution Sacramento Federal PM2.5 Nonattainment Area



Data Source: Table 4.1

Figure 4.2 shows 2011 PM2.5 precursor emission inventory categories as a percentage of the total inventory for SFNA-PM2.5. The main contribution of PM2.5 precursors (NO_X, VOC, SO_2, and NH_3) comes from mobile sources. On-road motor vehicles account for about 39% of the PM2.5 precursor inventory, and other mobile sources contribute 15%. Areawide Sources and stationary

sources, mostly from solvent evaporation and fuel combustion, contribute 29% and 17%, respectively. Residential fuel combustion, a subset of areawide sources, contributes 11% to the total inventory.

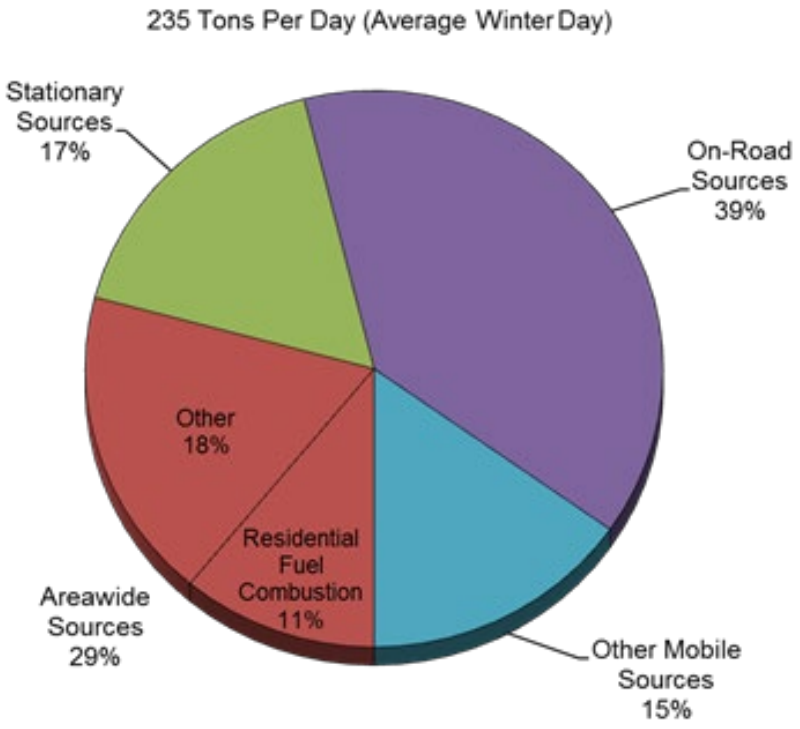


Figure 4.2 2011 PM2.5 Precursor (NO_X + VOC + SO_2 + NH_3) Emissions Distribution
Sacramento Federal PM2.5 Nonattainment Area

Data Source: Tables 4.2a and 4.2b.

- ## 4.6 Analysis of Emissions Inventory Forecasts

Emissions Inventory Trends

Figure 4.3 shows the attainment year inventory and forecasts through 2024 for PM2.5 and its precursors in the SFNA-PM2.5. These forecasts take into account anticipated population and economic growth and emission benefits from the federal, state and local control measures adopted as of mid-2011.

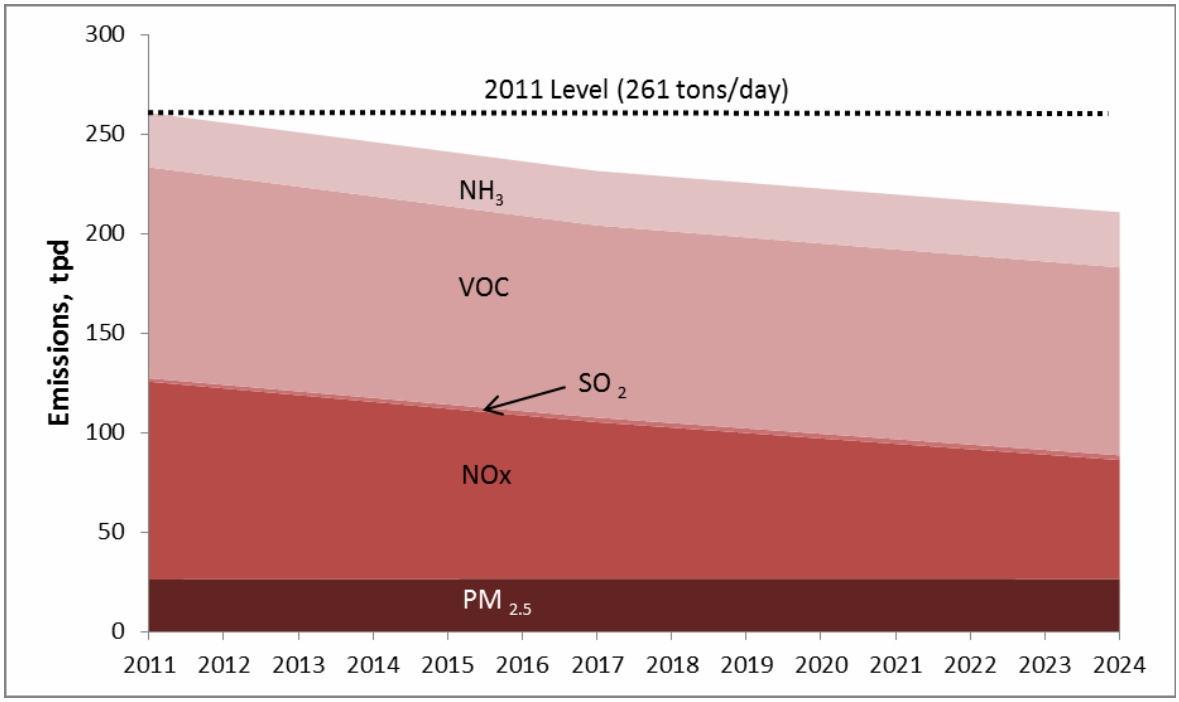


Figure 4.3 PM2.5 & PM2.5 Precursor Emissions Forecasts Sacramento Federal PM2.5 Nonattainment Area (Average Winter Day)

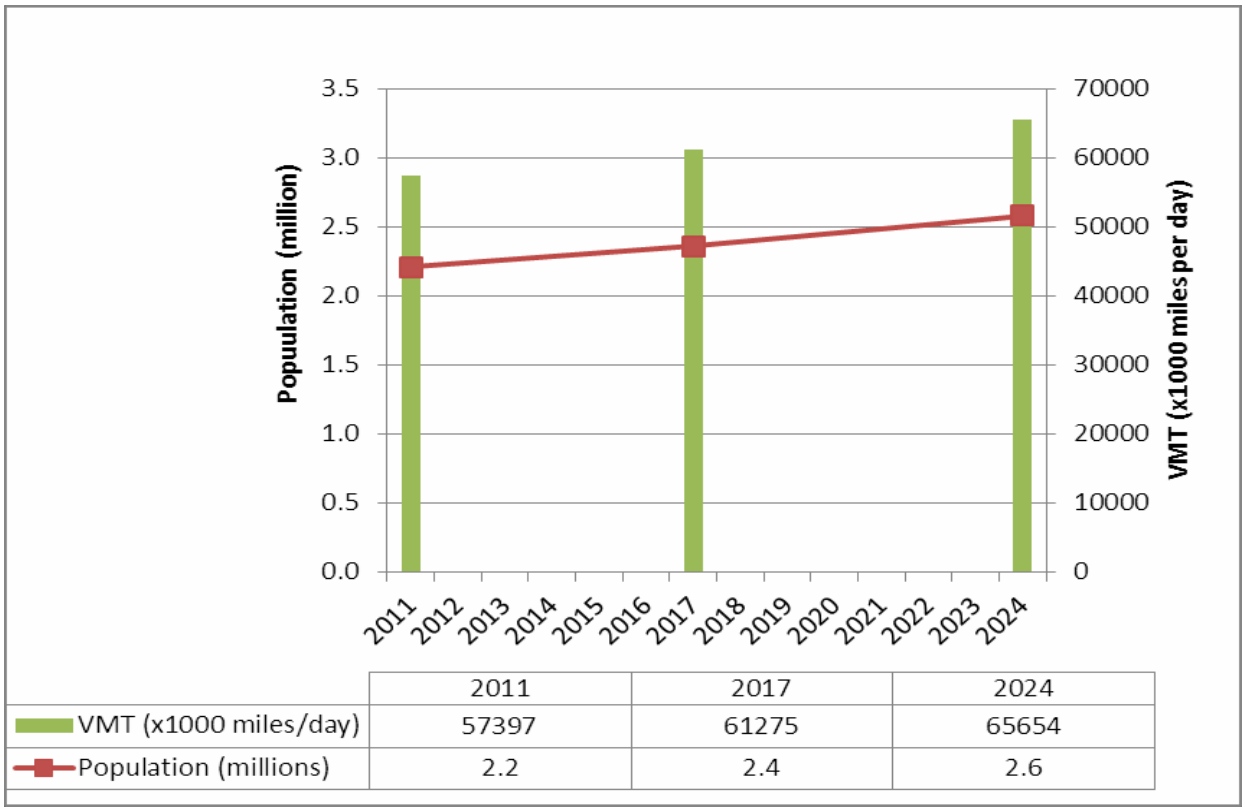
Data Source: Tables 4.1, 4.2a, and 4.2b.

The emission inventory trends show that between 2011 and 2024, the directly emitted PM2.5 remains fairly constant at 26 tons/day with a slight increase of 0.4 ton/day while the PM2.5 precursors steadily decline by 21%. The reductions in directly emitted PM2.5 gained from the controls on residential wood combustion, diesel trucks and off-road equipment are offset by growth in the Sacramento region. Whereas, despite growth, the PM2.5 precursors are projected to decrease by 50 tons per day from 2011 to 2024. The reduction in PM2.5 precursors are predominately from cleaner vehicles and equipment replacement due to mobile fleet turnover and from the adopted NO_X and VOC control commitments in the ozone attainment plans. Chapter 6 contains a discussion on control measures which have been implemented by the local air districts of the Sacramento Region, as well as State and federal agencies. These permanent and enforceable measures, which have reduced directly emitted PM2.5 and its precursors have decreased the region's PM2.5 design value significantly and led to PM2.5 attainment in 2011. These measures will continue to reduce emissions in future years so that the combined total emissions of directly emitted PM2.5 and its precursors remain below the attainment year emission level.

The SFNA-PM2.5 emissions inventory continues to decline despite increasing population and vehicle activity. Figure 4.4 illustrates trends in population and VMT. Based on SACOG forecasts and the U.S. Census (Glover 2012)(California Department of Finance, 2012), the population in the SFNA-PM2.5 is projected to grow at an average of 1.3%

annually from 2011 to 2024. The 2011, 2017 and 2024 VMT data are based on SACOG's adopted MTP/SCS 2035. Between 2011 and 2024, population and VMT in SFNA-PM2.5 are expected to increase by 17% and 14%,

respectively. These growth projections are used to make the 2017 and 2024 emissions inventory forecasts.



	2011	2017	2024
VMT (x1000 miles/day)	57397	61275	65654
Population (millions)	2.2	2.4	2.6

Figure 4.4 Population and Vehicle Miles Traveled (VMT) Forecasts - Sacramento Federal PM2.5 Nonattainment Area (2011-2024)

Data sources:

- (Glover, 2012)
- Solano pop is from DOF website: http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2001-10/view.php.
- (Abraham, 2012a), (Crow, 2012), (Abraham, 2012b)

4.7 Emission Reduction Credits

Certain pollutant emission reductions due to equipment shutdown or voluntary controls may be converted to emission reduction credits (ERCs) and registered with the air district. These ERCs may then be used as "offsets" to compensate for an increase in

emissions from a new or modified major emission source. In Sacramento County, ERCs may also be used as an alternative to, or bridge, to compliance with specified rules.

Since ERCs represent potential emissions, they need to be taken into account in the emission inventories. One method is to assume that the use of ERCs will already be included within the projected rate of stationary source growth in the emissions inventory. However, if the use of available ERCs exceeds anticipated emissions growth, future emissions could be underestimated. Therefore, to ensure that the use of ERCs will not be inconsistent with the future PM2.5 maintenance goals, the amount of ERCs issued for reductions that occurred prior to the 2011 base year are added to the emission inventory forecasts in the maintenance demonstration.

Unused Banked Emission Reduction Credits

The current unused banked ERCs[23] in the SFNA-PM2.5 are accounted for in this PM2.5 maintenance plan. Reductions in rice burning in Yolo-Solano air district are banked under Rule
3.21 Rice Straw Emission Reduction Credits and in Placer County Air Pollution District are banked under Rule 516 Rice Straw Emission Reduction Credits, and are included under unused banked ERCs. These ERCs are included to maintain the validity of previously banked ERCs and other reductions.

Future Bankable Rice Burning Emission Reduction Credits

California legislation[24] in 1991 (known as the Connelly Bill) required rice farmers to phase down rice field burning on an annual basis, beginning in 1992. A burn cap of 125,000 acres in the Sacramento Valley Air Basin was established, and growers with 400 acres or less were granted the option to burn their entire acreage once every four years. Since the rice burning reductions were mandated by state law, they would ordinarily not be “surplus” and eligible for banking. However, the Connelly bill included a special provision declaring that the reductions are qualified for banking if they meet the State and local banking rules.

Reduction in rice burning may be banked in the future because of ERC rules[25] under development in the Sacramento Air District. Table 4-4 shows the total amount of potential bankable rice burning ERCs in the SFNA-PM2.5.

Available Wood Stove/Fireplace Change-Out Incentive Program Emission Reduction Credits

Sacramento County’s Wood Stove/Fireplace Change-Out Incentive Program was established in June 2006 to provide financial incentives to remove or replace existing fireplaces and dirty wood stoves. Part of the funding for this incentive program comes from Sacramento County’s Solutions for the Environment and Economic Development (SEED) program. One of the SEED program requirements is that the revenue generated from ERCs be used to replenish the ERC bank. The emissions reductions generated using SEED revenue in this incentive program must be banked as ERCs. About half of the emission reductions from this program will be available for the ERC bank. These ERCs from the Wood Stove/Fireplace Change-Out Incentive Program from Sacramento County are also added to the total ERCs.

Summary of Emission Reduction Credits

ERCs issued for reductions that occurred prior to the 2011 attainment year and potential future bankable ERCs from rice burning and Wood Stove/Fireplace Change Out Incentive Program are summarized for the SFNA-PM2.5 in Table 4.4 and are accounted for in the emissions forecasts in Tables 4.1, 4.2, and 4.3. These ERCs are in tons per day for average winter day and are included in the PM2.5 maintenance demonstration for 2017 and 2024. See Appendix B6 for details.

[23] Each district provided their ERC information to CARB and is summarized in (Taylor, 2012a).
[24] Connelly-Areias-Chandler Rice Straw Burning Reduction Act of 1991, section 41865 of California Health and Safety Code.
[25] This rice burning ERC rule must be approved by EPA into the SIP for the rice ERCs to be used for compliance with federal air quality requirements.

Table 4.4 Emission Reduction Credits Added to the Maintenance Demonstration - Sacramento Federal PM2.5 Nonattainment Area

Emissions in tons/day (winter average day)	**PM2.**	**SO_X**	**NO_X**	**VOC**
Emission Reduction Credits (Includes YS Rice ERC)	1.6	0.6	2.8	4.3
Future Bankable Rice Burning Emission Reduction Credits (Sac County + Placer County)	0.31	0.06	0.28	0.25
Wood Stove/Fireplace Change-Out Incentive Program (Sac County Only)	0.09	0.001	0.01	0.10
Total ERCs	**2.0**	**0.6**	**3.1**	**4.6**
Total ERCs (rounded up)	**2**	**1**	**4**	**5**

- 4.8 Emissions Inventory Documentation

More detailed tables of the PM2.5, SO_2, NO_X, VOC, and NH_3 emissions inventory are provided in Appendix B. This appendix contains the estimated 2011, 2017, and 2024 emissions inventory for the SFNA-PM2.5.

Emission inventories are constantly being updated to incorporate new and better information and methodologies. Detailed information on emission methodologies, changes and forecasts can be found on CARB websites: http://www.arb.ca.gov/ei/ei.htm and http://www.arb.ca.gov/msei/msei.htm

4.9 Emissions Inventory Conclusions

This maintenance plan includes an emissions inventory for total directly emitted PM2.5, and its precursors, SO_2, NO_X, VOC, and NH_3. The emissions inventory shows that

residential combustion from fireplaces and woodstoves is the main contributor to the directly emitted PM2.5 inventory at 52%. It also shows that mobile sources dominate the PM2.5 precursor inventory at 54%.

The emission inventory trends show that between 2011 and 2024, PM2.5 precursors steadily decline about 21% primarily due to the phase-in of cleaner vehicles and equipment subject to steadily tightening emission standards. The trends show that PM2.5 increases slightly by 1%. Thus, the emission inventory trends demonstrate that the region will continue to attain the 24- hour PM2.5 NAAQS through 2024 by showing that the combined total future emissions of directly emitted PM2.5 plus its precursors for SFNA-PM2.5 remain below the attainment year emission level.

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Federal Clean Air Act, 42 U.S.C. 7505A, Title 1, Part D, Section 175A, [1990.], referenced on 12
October, 2012.

ATTACHMENT B – EMISSION REDUCTION CALCULATIONS

Emission Reduction Calculations

The following calculations and assumptions were used to derive the anticipated emission reduction benefit of the proposed grant application components.

1. **Woodstove Replacement (WR).** Replace 2,800(+) residential non-certified wood burning appliances with cleaner burning devices.

This component of the project anticipates replacing approximately 2,800 woodstoves with EPA Step 2 (May 2020 phase in) woodstoves. The TAG RFA recommends the use of EPA's woodstove change out emission reduction benefits calculator located here: *https://www.epa.gov/sites/production/files/2015-11/emissioncalculator_2.xlsx*

However, this calculator was developed many years ago and only accounts for emission reductions associated with changing out an uncertified woodstove to the early EPA Phase II standard (7.5 g/hr limit). Under the EPA's 2015 New Source Performance Standard (NSPS), emission standards were reduced to 4.5 g/hr in 2015. The standard will drop further to 2 g/hr in May 2020. The WR grant component proposes to only fund replacements compliant with the May 2020 "Step 2" standard. Therefore, the calculator was run and PM emission reductions were increased by 73% representing the drop in the standard from 7.5 to 2 g/hr. Finally, an error in the calculator prevents it from calculating PM2.5 reductions. We contacted Larry Brockman at EPA who emailed saying the PM10 and PM2.5 values are the same so the value you get for the PM10 will give you the PM2.5 estimate.

Using this calculator and applying the additional percent reduction yields the following. It's assumed all replaced devices are uncertified woodstoves and all are replaced with EPA 2020 Step 2 compliant woodstoves burning 3 cords a year before and after.

	PM2.5 (tons)	**NOx** (tons)	**VOC** (tons)
Annual Emission Reductions (2,800 replaced woodstoves)	177.96	12.45	332.84
Estimated Emissions Reductions (5yr)	890	62	1664
Total Lifetime Emissions Reductions (10yr)	1780	124	3328

2. **Unpaved Road Paving (URP).** Pave 11.3 miles of unpaved roadways.

The California Air Resources Board (CARB) has developed methodologies to estimate the amount of particulate matter emissions from unpaved and paved roadways. The difference in emissions between the two are the beneficial reductions in emissions resulting from paving an unpaved roadway. Both methodologies use EPA AP-42 emission factors. We propose to pave 11.3 miles of existing unpaved public roadway in El Dorado and Placer Counties.

Using CARB's *Miscellaneous Process Methodology 7.10 Unpaved Road Dust, Non-Farm Roads (December 2012)* we estimate **31.14 tons/yr of PM2.5 emissions** from the 11.3 miles of unpaved roads:

Unpaved Roadway Emissions

ARB Misc. Process Methodology 7.10, Unpaved Road Dust (Non-Farm Roads)
https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-10_2012.pdf

PM10 Emissions (tons/yr) = VMT(miles/yr) x EF-PM10($_{lbsPM10/mile}$)/(2000 lbs/ton) x rainfall adjustment

Steps	All TAG application Roadways combined	
1	Miles of Road	11.3
2	Annual VMT	388734.1
3	Rainfall Adj	0.8014
4	PM10 Emissions (tons/yr) (VMT x (EF-PM10/2000) x Rainfall Adj)	311.52
5	PM2.5 Emissions (tons/yr) (PM10/0.5943) x 0.0594	31.14
6	Total PM Emissions (PM10/0.5943)	524.18
7	PM10 Emissions for 5 years (tons)	1557.60
8	PM2.5 Emissions for 5 years (tons)	**155.68**

Inputs	
11.3	Total Miles of Road
94.25	Average Daily Trips (ADT) or Passes/Day (10 is statewide default)
388734	VMT/year = (Road miles x passes/day x days/year)
2	**(EF-PM10)** Emission Factor (lbs PM10/mile) from methodology
0.80137	Rainfall adjustment (365-P)/365
72.5	P from Table 3 (ave of EDV & PC)

Using CARB's *Miscellaneous Process Methodology 7.9 Entrained Road Travel, Paved Road Dust (March 2018)* we estimate **0.05 tons/yr (~100lbs/yr) of PM2.5 emissions** would result after the 11.3 miles of unpaved roads are paved:

Paved Roadway Emissions

ARB Miscellaneous Processes Methodologies 7.9 - Entrained Road Travel, Paved Road Dust
https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2018.pdf

Steps	All TAG application Roadways combined	
1	Annual VMT	388734.1
2	Emissions Factor PM10 (lbs PM10/mile)	0.001811
3	PM10 Emissions (tons/yr)	0.351907
4	PM2.5 Emissions (tons/yr) (PM10 x (0.0686/0.4572)) Based on 2006 updates to ARB speciation profiles for PM2.5, PM2.5 is estimated to be 6.86% of PM, or 15% of PM10	0.052801
5	PM10 Emissions for 5 years (tons)	1.760
6	PM2.5 Emissions for 5 years (tons)	**0.264**

Inputs	
0.0022	k = the U.S. EPA AP-42 particle size multiplier (PM10 = 0.0022 lb/VMT)
0.32	sL = the roadway-specific silt loading in grams/square meter (g/m^2) Table 7 2008 Silt Loadings
2.4	W = the average weight of vehicles traveling the road (California statewide default = 2.4 tons)
72.5	P = number of "wet" days, when at least one site per county received at least 0.01 inch of precipitation during the annual averaging period
365	N = the number of days in the annual averaging period (default = 365)
0.00181	EF - PM10 from Table 7 (average of EDC & PC) per mile or calculated by:
	EF-PM10 = $[k(sL)^{0.91}(W)^{1.02}]x(1-/4N)$
	E = particulate emission factor in units of pounds of particulate matter per VMT

The estimated emission reductions of paving 11.3 miles of unpaved road are as follows:

	PM2.5 (tons)	**NOx**	**VOC**
Annual PM2.5 reductions	31.1		
Emissions Reductions (5 yr)	155.4		
Total Lifetime Emission Reductions (7 yr)	218		

3. **Biomass Chipping and Composting (BCC).** Chip 1,500,000 cubic yards of residential biomass as an alternative to open burning. Distribute 200 compost bins.

Chipping: PC APCD, US Department of Agriculture (USDA), and Missoula Fire Sciences Laboratory collaborated on two field studies in 2016 & 2017 to determine the emission factors for small open pile burning in the Sierra Nevada[1]. One field study was conducted in October 2016 on three burn piles near Truckee, CA and the other was conducted in November 2017 on three burn piles in Alta, CA. The piles contained a mixture of ponderosa pine, western cedar, incense cedar, white fir, live oak, blue oak and black oak; all typical contents of a 4' x 4' residential foothill burn pile. The studies determined the following emission factors based on field results:

	PM2.5 (g emitted/kg burned)	**NOx** (g/kg)	**VOC** (g/kg)
2016 study	2.39	0.36	2.97
2017 study	4.04	0.46	5.77
Average	3.22	0.41	4.37
Lbs emissions/ tons burned	6.43 (lbs/ton burned)	0.82 (lbs/ton)	8.74 (lbs/ton)

For this TAG application, we will assume 1 cubic yard of stacked material prior to chipping is equal to about 100 lbs (0.05 tons) of chips or material burned. This is consistent with forester rule-of-thumb estimates. EDC Fire Safe Council and Placer Resource Conservation District estimate they will chip approximately 1,500,000 cubic yards over the 5 year grant term. The following are the estimated emissions reductions of chipping this material rather than burning.

	PM2.5 (tons)	**NOx** (tons)	**VOC** (tons)
Annually 300,000 cubic yards (assumes 1.5M cy/5)	48.2	6.2	65.6
1,500,000 cubic yards (5yr)	241.1	30.8	327.8

[1] *Emissions Sampling and Determination of Emission Factors from the Burning of Open Piled Forest Biomass Residue – Field Trip 1 Summary*, (Baker, Stephen, et al) April 2017
Determination of Black Carbon and Emission Factors from the Burning of Open Piled Forest Biomass Residue – Field Trip 2 Summary, (Baker, Stephen, et al) March 2018

Composting: Composting offers an alternative to burning. The proposed 200 compost bin component of the grant would focus on two of the most problematic areas of Placer County in terms of public complaints of outdoor burning: Todd Valley and the Meadow Vista.

Assuming 200 composters can hold 29 lbs of material each and can finish 4 batches of compost per year, that equals 23,200 lbs or roughly **12 tons per year** of material that could have been burned. Using EPA AP-42 Emission Factors for Open Burning[2] shown below, the composter portion of the grant would result in the following emission reductions from diverted greenwaste that would have been burned:

	PM2.5	NOx	VOC
AP-42 Emission Factor	38 (lbs/ton)	6 (lbs/ton)	28 (lbs/ton)
Emissions Reduction 200 Composters	0.22 tons per year	0.035 tpy	0.16 tpy
Composting Emission reductions (5yr)	1.10 tons	0.17 tons	0.81 tons
Total Lifetime Emission Reductions (10 yr)	2.2 tons	0.35 tons	1.62 tons

4. **Biomass Transport (BT).** Transport 20,000 tons of biomass to a biomass-to-energy facility as an alternative to open burning.

Placer County APCD, in partnership with US Forest Service, Sierra Pacific Industries, the Sierra Nevada Conservancy, TSS Consultants and the Placer County Planning Department, collaborated to produce a technical paper titled, "Emission Reductions from Woody Biomass Waste for Energy as an Alternative to Open Burning" (Springsteen, Bruce, et al 2011)[3] published in the *Journal of the Air & Waste Management Association*, Jan 2011. The demonstration project targeted woody biomass waste piles generated during two USFS fuel reduction efforts in the National Forest north of Foresthill in 2007. The thinning projects treated over 1,215 ha of mixed conifer and ponderosa pine stands with trunk diameters between 10-51cm at breast height. The calculations accounted for all emission sources, including the engine emissions from the trucks hauling the biomass to SPI's mill in Lincoln, CA, to the particulate matter emissions from the unpaved roads those trucks drove on using EPA AP-42 emission factors where necessary. The paper concluded the

[2] U.S.EPA AP-42, Chapter 2, Section 2.5 Open Burning, Table 2.5-6 – Emission Factor for Leaf Burning (Oct 1992)

[3] "Emission Reductions from Woody Biomass Waste for Energy as an Alternative to Open Burning" *Journal of the Air & Waste Management Association,* (Springsteen, Bruce, et al 2011) *https://www.placerair.org/DocumentCenter/View/2109/Emission-Reductions-from-Woody-Biomass-Waste-for-Energy-as-an-Alternative-to-Open-Burning-PDF*

emission reduction benefits of biomass to energy versus open pile burning in the forest are: PM: 12 lb/Bone Dry Ton (BDT) biomass, NOx: 3 lb/BDT, VOC: 10 lb/BDT, CO: 100 lb/BDT, and CO2e: 0.4 tons/BDT. Therefore, a diversion of 20,000 tons of biomass from burning to energy production would result in the following emission reductions:

	PM2.5	**NOx**	**VOC**
Emission Factor	12 (lbs/ton)	3 (lbs/ton)	10 (lbs/ton)
Annual Emission reductions (4,000 tons diverted)	24 tons	6 tons	20 tons
Emission reductions (5 yr) (20,000 tons diverted)	120 tons	30 tons	100 tons

5. **Agriculture Mobile Equipment Replacement (AMER).** Replace 76 agriculture mobile equipment with cleaner equipment.

California's Carl Moyer Grant Program ("Moyer") funds the replacement of various vehicles and equipment, including off-road agricultural equipment. California's "Funding Agricultural Replacement Measures for Emission Reductions (FARMER) grant uses the Moyer guidelines and emission reduction calculation methodology exclusively for the replacement of agricultural equipment. Placer APCD administers the "Shared Allocation Pool" portion of FARMER on behalf of the 18 air districts with smaller Ag equipment emission inventories.

Moyer emission reduction calculation methodology determines the "surplus" emission reductions that would occur if an older piece of Ag equipment is replaced with newer equipment. Estimated annual emissions (tons/yr) are calculated by the following formulas:

Annual emissions by pollutant (tons/yr) =
*(emission factor (g/bhp-hr) + deterioration product (g/bhp-hr) (if applicable)) * horsepower (hp) * load factor * annual activity (hrs/yr) * percentage operation in California / 907,200 (g/ton)*

Hour-based deterioration product (g/bhp-hr) =
*deterioration rate (g/bhp-hr-hr) * total equipment activity (hrs)*

*Total equipment activity(c) (hrs) = annual activity (hrs/yr) * deterioration life (yrs)*

Deterioration life (baseline equipment) (yrs) =

expected first year of operation – baseline engine model year + (project life / 2)

Deterioration life (reduced equipment) (yrs) = project life / 2

Once calculated, the difference between the annual emissions of the baseline equipment and the reduced technology equipment is the annual surplus emission reductions, which are the reduced emissions as a result of the proposed grant:

Annual surplus emission reductions by pollutant (tons/yr) = annual emissions for the baseline technology (tons/yr) – annual emissions for the reduced technology (tons/yr)

There were 57 agricultural equipment replacements done through the Shared Allocation Pool of FARMER thus far. The following average emission reductions (in tons) were calculated by the CARL reporting tool using the methodology above:

	PM2.5 Reductions (tons/yr)	**NOx** Reductions (tons/yr)	**VOC** Reductions (tons/yr)
Average Annual Emission Reduction per FARMER Project	0.0409	0.7202	0.0745
Total Annual Emission Reductions for 76 TAG projects	3.1	54.7	5.7
Total Emission Reductions for 76 TAG projects (5 yr)	15.5	273.7	28.3
Total Lifetime Emission Reductions for 76 TAG projects (10 yr Farm Equipment per Moyer Guidelines)	31	547	57

The average FARMER grant funding for these 57 projects was $78,516. Therefore, 76 TAG grant projects would be approximately $5,967,216.

Total Emission Reductions

The following table details the total emission reductions anticipated by the proposed suite of Targeted Airshed Grant projects. Emissions reductions are shown annually, a 5 year grant funded basis, and some components have a “Project Life” emissions reduction time period as their useful life, such as woodstoves and Ag equipment, far exceed the grant term.

	PM2.5 Reductions (tons)	NOx Reductions (tons)	VOC Reductions (tons)
1. Woodstove Replacement (WR) Annual Reductions	177.96	12.45	332.84
WR 5 Year Total Reductions	890	62	1664
WR Total Project Life Reductions	1780	125	3328
2. Unpaved Road Paving (URP) Annual Reductions	31.08		
URP 5 Year Total Reductions	155.42		
URP Total Project Life Reductions (7 yr)	217.58		
3. Biomass Chipping and Composting (BCC) Annual Reductions	48.4	6.2	65.8
BCC 5 Year Reductions	242.2	30.9	328.6
BCC Total Project Life Reductions (Composting 10 yr)	243.3	31.1	329.4
4. Biomass Transport (BT) Annual Reductions	24	6	20
BT 5 year Reductions	120	30	100
5. Agriculture Mobile Equipment Replacements (AMER) Annual Reductions	3.11	54.74	5.66
AMER 5 Year Reductions	15.54	273.68	28.31
AMER Total Project Life Reductions (10 yr)	31.08	547.35	56.62
Total Annual Emission Reductions	**478**	**104**	**687**
Total 5 Year Emission Reductions	**1424**	**397**	**2122**
Total Project Lifetime Reductions	**2392**	**733**	**3814**

Attachment C. Leveraged Funds Cost Share Commitment Letters

EL DORADO COUNTY
DEPARTMENT OF TRANSPORTATION
http://www.edcgov.us/DOT/

PLACERVILLE OFFICES:
MAIN OFFICE:
2850 Fairlane Court, Placerville, CA 95667
(530) 621-5900 / (530) 626-0387 Fax

CONSTRUCTION & MAINTENANCE:
2441 Headington Road, Placerville, CA 95667
(530) 642-4909 / (530) 642-0508 Fax

LAKE TAHOE OFFICES:
ENGINEERING:
924 B Emerald Bay Road, South Lake Tahoe, CA 96150
(530) 573-7900 / (530) 541-7049 Fax

MAINTENANCE:
1121 Shakori Drive, South Lake Tahoe, CA 96150
(530) 573-3180 / (530) 577-8402 Fax

February 1, 2020

Timothy Roberts
USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave NW
Washington, DC 20460

RE: Letter of Support for RFA# EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

El Dorado County (EDC) Department of Transportation (DOT) supports the joint application of the *Sacramento Metropolitan Air Quality Management District* to the United States Environmental Protection Agency's (USEPA) 2019 Targeted Airshed Grant Program.

The western portion of EDC is part of the Sacramento Federal Nonattainment Area (SFNA) for 2006 PM2.5 24-hour standard, which also includes portions of Sacramento, Yolo, Solano and Placer Counties. EDC DOT regularly works with the EDC Air Quality Management District (AQMD) on transportation projects that improve air quality and quality of life for EDC residents.

EDC DOT has successfully partnered with AQMD in the past to install 2.54 miles of new chip seal pavement on a previously unpaved portion of Bayne Road. Bayne Road residents commented that they were impressed how DOT and AQMD worked together to deliver a well-executed and coordinated road improvement project.

Unpaved, dirt roads are often the only access residents in the rural areas of EDC have to their homes and EDC has approximately 58 miles of unpaved roads that, when traveled by motor vehicles, continue to create significant amounts of dust or particulate pollution. To date, funding the construction of paving projects on some of the most frequently used, unpaved roads in EDC have been cost prohibitive.

If awarded, financial assistance through the Targeted Airshed Grant Program would allow EDC DOT to construct three additional paving projects within the SFNA. Specifically, grant funds would be used by EDC DOT staff to pay for hiring a contractor for the construction phase of these three paving projects. All pre-construction and prep work would be funded and completed by EDC DOT.

DOT has a long history of partnering with AQMD on other transportation improvement projects to improve air quality. Our strong working relationship has allowed for the installation of electric vehicle charging stations at County-owned and leased facilities and the Diesel Fleet Retrofit project which brought County- owned diesel vehicles and equipment into compliance with Air Resources Board requirements.

EDC DOT and AQMD strongly support the Sac Metro Air District's application for the Targeted Airshed Grant Program. EDC DOT is confident that these projects will significantly reduce air pollution in the EDC portion of the SFNA.

This application is supported by multiple stakeholders within the SFNA and the projects proposed would be difficult to fund through other means. EDC DOT urges USEPA to give Sac Metro Air District's application **full** consideration.

Sincerely,

Rafael Martinez
Director of Transportation

COUNTY OF Placer

APRIL 7, 2020

Timothy Roberts
USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave NW
Washington DC 20460

RE: Letter of Leveraging Commitment

Dear Mr. Roberts,

The Placer County Department of Public Works Road Maintenance Division supports the joint application of the *Sacramento Metropolitan Air Quality Management District* to the United States Environmental Protection Agency (USEPA)'s 2019 Target Airshed Grant Program.

The western portion of Placer County is part of the Sacramento Federal Nonattainment Area (SFNA) for 2006 PM2.5 24-hour standard, which also includes portions of Sacramento, Yolo, Solono, and El Dorado Counties. The Department regularly works with the Placer County Air Quality Management District (AQMD) on transportation projects that improve air quality and quality of life for Placer County residents.

The Road Maintenance Division is prepared to contribute up to $150,000 to leverage grant funds for the road paving grant component. We look forward to partnering on future transportation improvement projects.

If there are any questions, please feel free to contact us at 530.745.7565, or pcroads@placer.ca.gov.

Sincerely,

County of Placer
Department of Public Works
Ken Grehm, Director

Kevin Taber

Kevin Taber, PE, Engineering Manager

Department of Public Works & Facilities ▪ Road Maintenance Division
11428 F Ave ▪ Auburn, CA 95603
(530) 889-7565 office ▪ (530) 889-6989 fax ▪ pcroads@placer.ca.gov placer.ca.gov

Attachment D. Biographical Sketches

El Dorado AQMD Staff:

Dave Johnston, Air Pollution Control Officer:

Mr. Johnston has worked for the County of El Dorado for 31 years for the Office of Emergency Services, Environmental Management Department and the Air Quality Management District. He has Bachelor's degrees in Chemistry and Psychology. He has administered over 75 grant projects totaling over $25M. Grant projects have included EV infrastructure, EV incentive, wood stove, Carl Moyer, FARMER, lawn mower, school bus, recycling, road paving, shuttle services, hazardous materials incident response, household hazardous waste, solid waste collection, used oil recycling, used tire recycling, and electronic waste recycling.

Scott Wilson, Air Quality Administrative Analyst:

Mr. Wilson has worked for the County of El Dorado for 14 years in lead fiscal/budgetary/administrative positions in the Department of Transportation, Community Development Agency, and the Air Quality Management District. He has a BA degree in Communication Studies from CSU Sacramento. He has administered grants ranging in size from several thousand dollars to multi-million dollars in the fields of local air quality improvement, electric vehicle infrastructure projects, and large transportation infrastructure projects.

Placer County APCD Staff:

Erik White, Air Pollution Control Officer:

Mr. White currently serves as the Air Pollution Control Officer (APCO) of the Placer County Air Pollution Control District (District), assuming the role in 2015. Prior to his appointment as District APCO, Erik spent 22 years with the California Air Resources Board (CARB) working in several high priority program areas, including the development and implementation of: California's reformulated fuels programs; many mobile source diesel risk reduction programs, including the Statewide Truck and Bus and In-Use Off-Road Vehicle Regulations; over $300 million in criteria and greenhouse gas incentive programs, including the Carl Moyer Program, the Air Quality Improvement Program, and the Low-Carbon Transportation Program; and new heavy-duty engine and vehicle standards. Erik has a B.S. in Aerospace Engineering from the University of California, Los Angeles.

Adam Baughman, Deputy Air Pollution Control Officer:

Mr. Baughman recently joined Placer County APCD after his 8+ year employment as an Air Quality Engineer with El Dorado AQMD. Prior to that, we worked in Transportation Planning for 4+ years with El Dorado County and Land Use Planning for over 8 years with Santa Barbara County. He has a Bachelor's degree in Geography and a Master's degree In Environmental Science and Management (MESM) from the University of California, Santa

Barbara. He has both applied for and administered state and federal grants ranging in size from several thousand dollars to multi-million dollars in the fields of local air quality improvement, electric vehicle infrastructure projects, and large transportation infrastructure projects.

Yolo-Solano AQMD Staff:

Mat Ehrhardt, Air Pollution Control Officer

Mr. Ehrhardt has held the position of Air Pollution Control Officer of the Yolo-Solano Air Quality Management District since 2003. In this position, Mr. Ehrhardt oversees all the operations of the district and coordinates with the district's Board of Directors to determine policies and overall direction for the district. Mr. Ehrhardt holds a degree in Mechanical Engineering and is a registered Professional Engineer.

Matt Jones, Planning Manager

Mr. Jones is the Planning Manager for the Yolo-Solano Air Quality Management District and has worked for the District since 2005. As Planning Manager, Mr. Jones has primary responsibility for the air monitoring, planning, and incentive program functions of the district. Mr. Jones has successfully developed and managed the district's Clean School Bus Program, Clean Air Funds incentive program, Woodstove Changeout incentive program, and Agricultural Equipment Replacement program, all of which have obtained significant emission reductions to assist with meeting State and Federal ambient air quality standards. Prior to his tenure at the district, Mr. Jones held the position of Senior Scientist at a private consulting firm where he prepared air quality analyses for various development projects in order to satisfy the requirements of the California Environmental Quality Act.

Jim Antone, Associate Planner

Mr. Antone has held the position of Associate Planner at the Yolo-Solano Air Quality Management District since 2002 and is the district's primary point of contact for all ongoing incentive programs with responsibility for the day-to-day operations of these programs. Mr. Antone has expertise in administering district incentive programs in compliance with the applicable program guidelines developed by the district's oversight agencies. To date, Mr. Antone has assisted with successfully allocating over $2 million to projects participating in the district's Clean School Bus Program, over $2 million to projects participating in the district's Agricultural Equipment Replacement Program, and over $250,000 to projects in the district's Woodstove Changeout program.

Sacramento Metropolitan AQMD Staff:

Alberto Ayala, Air Pollution Control Officer

Alberto Ayala began his tenure as the Air Pollution Control Officer and Executive Director of the Sacramento Metropolitan Air Quality Management District on July 17, 2017. In this capacity, Alberto now leads a team of dedicated professionals focused on advancing the region towards cleaner air and a sustainable future. The Sac Metro Air District provides regional leadership protecting public health and the environment from the adverse effects of air and carbon pollution and implements economically sensible policies for achieving the state's air quality and climate goals. Under the direction of the Sac Metro Air District Board of Directors, Alberto and the team will prioritize contributing to the expansion and acceleration of the region's sustainability efforts and ensuring the continued implementation of the agency's long-standing and successful rules, programs, and operations. Mr. Alberto holds B.S. ('91), M.S.E. ('93), and Ph.D. ('97) degrees in mechanical engineering from the University of California, Davis.

Mark Loutzenhiser, Program Coordination Division Manager

Mr. Loutzenhiser has served as the Program Coordination Division Manager for the Sac Metro Air District since May of 2016, where he is responsible for air monitoring, rule development and planning efforts. He previously served eight years as Program Manager for the Mobile Sources Section with responsibility for incentive programs and, before that, seven years as Program Supervisor in the Stationary Sources Division with responsibility for permitting and enforcement. Mark originally joined the Sac Metro Air District in early 1999 as an Air Quality Specialist after kick-starting his air quality career in 1995 at the San Juan Valley Unified Air Pollution Control District as an Air Quality Engineer. Mark holds a Bachelor of Science degree in Chemical Engineering from University of California, Berkeley.

Jamille Moens, Administrative Services Division Manager

Jamille Moens joined the Sac Metro Air District in November of 2014 as the Administrative Services Division Manager. Jamille has served as a manager in municipal and special district governments since 2002. She is an engaged leader who works with elected officials, staff, and regional partners to solve complex problems and guide activities towards common goals using her expertise in areas such as public policy, finance, information technology, and project management. Jamille enjoys working with a group of talented professionals to execute policies and programs that ensure the District achieves its mission of meeting state and federal air quality and climate goals and to address future challenges. Jamille has a Bachelor of Science degree in Industrial & Labor Relations from Cornell University and a Master of Arts in Political Science from Stanford University.

Attachment E. Partnership Letters

El Dorado County Fire Safe Council
P.O. Box 1011
Diamond Springs, CA 95619
Phone: (530) 647-1700
Email: board@edcfiresafe.org
Website: edcfiresafe.org
"Public and Private Partners Working Together to Protect People, Homes, and Natural Resources"

February 5, 2020

Timothy Roberts
USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave NW
Washington, DC 20460

RE: Partnership Letter for RFA# EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

El Dorado County Fire Safe Council (EDCFSC) supports the joint application of the *Sacramento Metropolitan Air Quality Management District* to the United States Environmental Protection Agency's (USEPA) 2019 Targeted Airshed Grant Program.

The western portion of El Dorado County is part of the Sacramento Federal Nonattainment Area (SFNA) for 2006 PM2.5 24-hour standard, which also includes portions of Sacramento, Yolo, Solano and Placer Counties within California.

EDCFSC regularly collaborates with the El Dorado County Air Quality Management District (AQMD) to provide education on actions and methods that improve air quality and quality of life for EDC residents. This is accomplished by outreach efforts through our 24 Associate Community Fire Safe Councils covering a majority of the western slope of El Dorado County (EDC). Additionally, EDCFSC operates a chipping program that provides free chipping services to EDC residents.

If awarded, financial assistance through the Targeted Airshed Grant Program would allow EDCFSC to continue the chipping program that serves to educate, encourage and facilitate individual residents and communities to create defensible space and remove hazardous vegetation. This project will not perform defensible space for residents, rather, this program safely processes (chips) the materials removed by the resident. Additional benefits derived from the program are:

- Community action and cooperation.
- Safe disposal of slash from dead and dying trees.
- Reduced risk of wildfire to habitable structures.
- Reduced risk from escaped residential burn piles.

- Reduced risk to utility transmission and distribution lines, communication lines and cell towers.
- Most residents use the resulting chips for landscaping and ground cover improving water retention, reducing erosion and reducing risk to watershed.
- Reduction of air emissions from residential burning.
- Reduction of air emissions from wildfires.

Having originally formed in 2002, EDCFSC (a 501c3 non-profit) has a long history of serving the residents and communities of El Dorado County and as primarily an all-volunteer organization, we provide exceptional value for all funding received. Funds would be used primarily for contractors to provide the chipping services with only a small amount going to administration of the program by EDCFSC's clerk of the board. The chipping program is a time tested, successful program with all oversight of EDCFSC and programs performed by the Board of Directors.

Through this application, EDCFSC seeks to continue and expand on our long term partnership with AQMD to improve air quality and the quality of life for El Dorado County residents and we strongly support the Sac Metro Air District's application for the Targeted Airshed Grant Program.

EDCFSC urges USEPA to give Sac Metro Air District's application full consideration.

Sincerely,

Steve Willis
Chairperson

Placer County Resource Conservation District

April 7, 2020

Timothy Roberts USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave NW
Washington, DC 20460

RE: Partnership Letter for RFA# EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

Placer County Resource Conservation District (Placer RCD) supports the joint application of the Sacramento Metropolitan Air Quality Management District to the United States Environmental Protection Agency's (USEPA) 2019 Targeted Airshed Grant Program.

Portions of Placer County are part of the Sacramento Federal Nonattainment Area (SFNA) for 2006 PM2.5 24-hour standard, which also includes portions of Sacramento, Yolo, and Solano Counties within California. Placer RCD operates a chipping program that provides low-cost chipping services to Placer County residents and free chipping services to low-income and disabled residents.

If awarded, financial assistance through the Targeted Airshed Grant Program would allow Placer RCD to continue the chipping program that serves to educate, encourage and facilitate individual residents and communities to create defensible space and remove hazardous vegetation. This project will not perform defensible space for residents, rather, this program safely processes (chips) the materials removed by the resident.

Additional benefits derived from the program are:

- Community action and cooperation.
- Safe disposal of slash from dead and dying trees.
- Reduced risk of wildfire to habitable structures.
- Reduced risk from escaped residential burn piles.

281 Nevada Street | Auburn | CA | 95603
530.390.6680 | www.placerrcd.org

Placer County Resource Conservation District

- Reduced risk to utility transmission and distribution lines, communication lines and cell towers.
- Most residents use the resulting chips for landscaping and ground cover improving water retention, reducing erosion and reducing risk to watershed.
- Reduction of air emissions from residential burning.
- Reduction of air emissions from wildfires.

Placer RCD has a long history of serving the residents and communities of Placer County, we provide exceptional value for all funding received. Funds would be used primarily to provide the chipping services with only a small amount going to administration of the program. The chipping program is a time tested, successful program with all oversight of Placer RCD and programs performed by the Board of Directors.

Through this application, Placer RCD seeks to continue and expand on our long-term partnership with AQMD to improve air quality and the quality of life for Placer County residents and we strongly support the Sac Metro Air District's application for the Targeted Airshed Grant Program.

Placer RCD urges USEPA to give Sac Metro Air District' s application full consideration.

Sincerely,

Sarah Jones

Sarah Jones
District Manager/Executive Director

281 Nevada Street | Auburn | CA | 95603
530.390.6680 | www.placerrcd.org

The Cleaner Air Partnership

A joint project of Breathe California Sacramento Region, the Sacramento Metro Chamber of Commerce, Valley Vision, and others to help the Sacramento region meet clean air standards that protect health, promote economic growth, and support equity.

April 3, 2020

Timothy Roberts

U.S. EPA Headquarters

William Jefferson Clinton Building

1200 Pennsylvania Ave., N.W.

Washington, D.C. 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

On behalf of the Sacramento region's Cleaner Air Partnership, we write to support the joint application of the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's 2019 Targeted Airshed Grant Program.

The Cleaner Air Partnership (CAP) is a project of Breathe California Sacramento Region, the Sacramento Metro Chamber of Commerce, Valley Vision, and other public, private and nonprofit partners which include the applicant and project team, to help the Sacramento region meet clean air standards that protect health, promote economic growth, and support equity. We have worked together to achieve emissions reductions and improve health outcomes in our region for many years.

The major elements of The Sac Metro Air District's joint proposal are wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully augmenting its resilience to catastrophic wildfires.

Because U.S. EPA has determined that the region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for Targeted Airshed Grant (TAG) funding. This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan in that the program will be administered efficiently and consistently throughout target communities to ensure that more Americans are living and working in areas that meet high air quality standards, in line with the priorities of the Cleaner Air Partnership.

We thank you in advance, on behalf of the Sacramento region's longstanding collaborative of business leaders, environmental advocates, and air quality regulators. If you have any questions, please reach out by emailing meg.arnold@valleyvision.org or calling (916) 325-1630.

Sincerely,

The Cleaner Air Partnership

John Lane,
Chairman,
Cleaner Air Partnership

Stacy Springer
CEO,
Breathe California Sacramento Region

Amanda Blackwood
President & CEO,
Sacramento Metro Chamber of Commerce

Meg Arnold
Interim CEO,
Valley Vision

Alberto Ayala, Ph.D., M.S.E
Executive Director, APCO
Sacramento Metro Air Quality Management District

Erik White
Air Pollution Control Officer,
Placer Air Pollution Control District

Dave Johnston
Air Pollution Control Officer,
El Dorado Air Quality Management District

Chris Brown
Air Pollution Control Officer,
Feather River Air Pollution Control District

Mat Ehrhardt
Air Pollution Control Officer,
Yolo-Solano Air Quality Management District

CHAIRMAN
BOARD OF SUPERVISORS
700 H Street, Suite 2450
Sacramento, CA 95814
Telephone: (916) 874-5485
Fax: (916) 874-7593
supervisorserna@saccounty.net

County of Sacramento

PHIL SERNA
SUPERVISOR
FIRST DISTRICT

LISA NAVA
Chief of Staff

April 7, 2020

Timothy Roberts
U.S. EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts:

I write in my capacity serving on both the Sacramento County Board of Supervisors and as a member of the California Air Resources Board to express support for the joint application of the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's 2019 Targeted Airshed Grant Program.

Since 2013, I have represented the Sacramento Region Air Districts on the California Air Resources Board (CARB). The California Air Resources Board (CARB) is charged with protecting the public from the harmful effects of air pollution and developing programs and actions to fight climate change. From requirements for clean cars and fuels to adopting innovative solutions to reduce greenhouse gas emissions, California has pioneered a range of effective approaches that have set the standard for effective air and climate programs for the nation, and the world.

The major elements of the Sac Metro Air District's joint proposal are wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully augmenting its resilience to catastrophic wildfires.

CARB is concerned about the number of adverse health impacts associated with exposure to PM 2.5. Short-term exposures (up to 24-hours duration) have been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency room visits, respiratory symptoms, and restricted activity days. Of all of the common air pollutants, PM 2.5 is associated with the greatest proportion of adverse health effects related to air pollution, both in the United States and worldwide based on the World Health Organization's Global Burden of Disease Project.

Support letter from County Supervisor Phil Serna **April 7, 2020**
RE: Support for EPA-OAR-OAQPS-20-01

Because U.S. EPA has determined that the Sacramento region is among the top five most polluted areas relative to the 24-hour PM 2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for Targeted Airshed Grant (TAG) funding. This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan in that the program will be administered efficiently and consistently throughout target communities to ensure that more Americans are living and working in areas that meet high air quality standards, in line with the priorities of CARB and the Sacramento Region Air Districts.

I thank you in advance as a member of the California Air Resources Board leadership, and urge full consideration of this application. If you have any questions, please reach out to my Chief of Staff, Lisa Nava, by emailing NavaL@saccounty.net or calling (916) 874-5485.

Respectfully,

Phil Serna
Supervisor, First District
Member, California Air Resources Board

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0006
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Assembly
California Legislature

KEVIN KILEY
ASSEMBLYMEMBER, SIXTH DISTRICT

April 6, 2020

Timothy Roberts
U.S. EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

I write to support the joint application of the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's 2019 Targeted Airshed Grant Program.

The major elements of The Sac Metro Air District's joint proposal are wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully augmenting its resilience to catastrophic wildfires.

Because U.S. EPA has determined that the region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for Targeted Airshed Grant (TAG) funding. This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan in that the program will be administered efficiently and consistently throughout target communities to ensure that more Americans are living and working in areas that meet high air quality standards, in line with the priorities of the Office of Assemblyman Kiley
.
We thank you in advance, and urge full consideration of this application.

Sincerely,

KEVIN KILEY
Assemblyman, 6th District

April 7, 2020

Timothy Roberts
U.S. EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

I write in strong support of the joint application of the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's 2019 Targeted Airshed Grant Program.

As Sacramento's Representative in Congress, and as a senior member of the Energy and Commerce Committee, I am aware of the air quality challenges Sacramento faces and am committed to working together to make improvements. The major elements of The Sac Metro Air District's joint proposal are wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully augmenting its resilience to catastrophic wildfires.

Because U.S. EPA has determined that the region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for Targeted Airshed Grant (TAG) funding. This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan in that the program will be administered efficiently and consistently throughout target communities to ensure that more Americans are living and working in areas that meet high air quality standards.

As the Member of Congress representing the heart of the Sacramento region, I am supportive of the application put forth and thank you for your consideration.

Sincerely,

Doris Matsui

DORIS MATSUI
Member of Congress

JOHN GARAMENDI
CALIFORNIA, 3RD DISTRICT

ARMED SERVICES COMMITTEE
CHAIRMAN READINESS
STRATEGIC FORCES

TRANSPORTATION AND INFRASTRUCTURE COMMITTEE
HIGHWAYS & TRANSIT
WATER RESOURCES
ECONOMIC DEVELOPMENT
COAST GUARD & MARITIME

UNITED STATES CONGRESS

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DISTRICT OFFICES:

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DAVIS, CA 95616
PHONE: (530) 753-5301

1261 TRAVIS BOULEVARD, SUITE 180
FAIRFIELD, CA 94533
PHONE: (707) 438-1822

April 8, 2020

The Honorable Andrew Wheeler, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Administrator Wheeler:

I write to support the joint application by the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's Targeted Airshed Grant Program. The District comprises El Dorado, Placer, Sacramento, Solano, Sutter, and Yolo Counties in California.

As outlined in the application, the District's proposal includes woodstove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. This project will reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while also improving resilience to catastrophic wildfires.

As determined by USEPA, the Sacramento region is among the top 5 most impacted areas in the nation under the 24-hour PM 2.5 National Ambient Air Quality Standards. If approved for grant funding, the actions outlined in District's application will reduce particulate matter significantly, achieving long-term public health and air quality benefits.

As California continues to face devastating wildfires, we must make every effort to improve resiliency and reduce particulate matter in the Sacramento metropolitan region and across the state. Again, I urge you to give all due consideration to the District's application for the Targeted Airshed Grant Program. Thank you for your consideration.

Sincerely,

JOHN GARAMENDI
Member of Congress

STATE CAPITOL
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(916) 319-2004
FAX (916) 319-2104

Assembly
California Legislature

CECILIA M. AGUIAR-CURRY
ASSEMBLYMEMBER, FOURTH DISTRICT

COMMITTEES
CHAIR: LOCAL GOVERNMENT
AGRICULTURE
GOVERNMENTAL ORGANIZATION
TRANSPORTATION
JOINT LEGISLATIVE COMMITTEE ON
EMERGENCY MANAGEMENT

April 6, 2020

Timothy Roberts
U.S. EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

I write to support the joint application of the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's 2019 Targeted Airshed Grant Program.

My rural Assembly district includes communities in Yolo, Solano, Colusa, Napa, Sonoma, and Lake Counties. The geography and terrain in our area unfortunately present fuel for fire, and put us at extreme risk of wildfires each year. In the last three years, our counties have been devastated by multiple fires, and is often heavily impacted by subsequent air quality issues, endangering the health of our community members. The number of Spare the Air days, when sensitive residents must limit their outdoor exposure, is increasing, not just due to fire but climate change as a whole.

The major elements of The Sac Metro Air District's joint proposal are wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully augmenting its resilience to catastrophic wildfires.

Because U.S. EPA has determined that the region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for Targeted Airshed Grant (TAG) funding. This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan; the program will be administered efficiently and consistently throughout target communities to ensure more Americans live and work in areas that meet high air quality standards.

I urge full consideration of this application; please contact me if I can be of further assistance.

Sincerely,

Cecilia M. Aguiar-Curry

CECILIA AGUIAR-CURRY
Assemblymember, 4th District

STATE CAPITOL, ROOM 4032
SACRAMENTO, CA 95814
TEL (916) 651-4003
FAX (916) 651-4903

California State Senate

BILL DODD

SENATOR, THIRD DISTRICT

CHAIR: SENATE GOVERNMENTAL ORGANIZATION COMMITTEE

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ENERGY, UTILITIES & COMMUNICATION
INSURANCE
TRANSPORTATION
JOINT COMMITTEE
EMERGENCY MANAGEMENT
SELECT COMMITTEE
CALIFORNIA'S WINE INDUSTRY
CO-CHAIR

April 8, 2020

Timothy Roberts
U.S. EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: Letter of Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

I am writing to support the joint application of the Sacramento Metropolitan Air Quality Management District (SMAQMD) to the U.S. Environmental Protection Agency's (EPA) 2019 Targeted Airshed Grant Program. The Sacramento Metropolitan Air Quality Management District proposal will help address both air quality and wildfire resilience.

The U.S. EPA determined that the Sacramento region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS). Therefore, the region is eligible for Targeted Airshed Grant (TAG) funding. The goals of the SMAQMD are to use the grant funding from the U.S. EPA to replace wood stoves, pave rural roads, facilitate the chipping and composting of vegetation, provide incentives for transportation of biomass, and replace of aging agricultural equipment. By accomplishing each of its goals, the SMAQMD will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area (SFNA), while meaningfully augmenting its resilience to catastrophic wildfires.

This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan, in that, the program will be administered efficiently and consistently throughout target communities to ensure that more Americans are living and working in areas that meet high air quality standards. Consequently, the funding provided by the U.S. EPA will provide cleaner air to the residents of all five counties in the SFNA (El Dorado, Placer, Sacramento, Solano, and Yolo).

As it would be difficult for the SMAQMD to obtain funding through other means, I strongly encourage you to help provide a cleaner and healthier environment in the Sacramento region by fulling the grant request of SMAQMD.

Sincerely,

Bill Dodd

BILL DODD
Senator, District 3

CAPITOL OFFICE
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California State Senate

SENATOR
DR. RICHARD PAN
SIXTH SENATE DISTRICT

CHAIR
PUBLIC EMPLOYMENT & RETIREMENT
BUDGET SUBCOMMITTEE #3 ON HEALTH AND HUMAN SERVICES

COMMITTEES
AGRICULTURE
BUDGET & FISCAL REVIEW
HEALTH
EDUCATION
BUSINESS, PROFESSIONS & ECONOMIC DEVELOPMENT

April 6, 2020

Timothy Roberts
U.S. EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

As a Pediatrician and the State Senator for Sacramento, I write to support the joint application of the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's 2019 Targeted Airshed Grant Program.

The major elements of The Sac Metro Air District's joint proposal are wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully augmenting its resilience to catastrophic wildfires.

Because U.S. EPA has determined that the region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for Targeted Airshed Grant (TAG) funding. This project would be implemented in accordance with EPA's FY 2018-2022 Strategic Plan in that the program will be administered efficiently and consistently throughout target communities to ensure that more Americans are living and working in areas that meet high air quality standards, in line with the priorities of our region.

As a practicing pediatrician and State Senator, I want to thank you in advance, while asking for your full consideration of this application. If you have any questions, please contact my office at (916) 651-4006.

Sincerely,

Dr. Richard Pan, M.D.
Sixth Senate District

DIANNE FEINSTEIN
CALIFORNIA

COMMITTEE ON THE JUDICIARY - RANKING MEMBER
SELECT COMMITTEE ON INTELLIGENCE
COMMITTEE ON APPROPRIATIONS
COMMITTEE ON RULES AND ADMINISTRATION

United States Senate

April 8, 2020

Mr. Timothy Roberts
U.S. Environmental Protection Agency
1200 12 Pennsylvania Ave., NW
Washington, D.C. 20460

Dear Mr. Roberts,

I am writing in support of the Sacramento Metropolitan Air Quality Management District's (AQMD) joint application to the U.S. Environmental Protection Agency's (EPA) 2019 Targeted Airshed Grant (TAG) program.

The AQMD's joint proposal includes wide-ranging measures to reduce fine particulate matter ($PM_{2.5}$), including paving of unpaved rural roads, chipping and composting vegetation, incentivizing transportation of biomass, and replacing aging agricultural equipment and wood stoves. By utilizing these established methods, the proposed project will quantifiably reduce $PM_{2.5}$ in the Sacramento Federal $PM_{2.5}$ Nonattainment Area, while also increasing resilience to catastrophic wildfires.

The EPA has determined that Sacramento, California is among the top 5 most polluted areas for 24-hour $PM_{2.5}$, and is thus eligible for funding through the TAG program. AQMD has a strong track record of working with local partners to efficiently implement such programs in accordance with EPA's Strategic Plan. AQMD and its partners are dedicated to ensuring that target communities' members are living and working in areas that meet high air quality standards.

I urge you to give this application your full consideration. If you have any questions, please do not hesitate to contact my San Francisco office at (415) 393-0707.

Sincerely,

Dianne Feinstein
United States Senator

DF/zv

WASHINGTON, DC 20510-0504
http://feinstein.senate.gov

AMI BERA, M.D.
7TH DISTRICT, CALIFORNIA

COMMITTEE ON FOREIGN AFFAIRS:
SUBCOMMITTEES:
CHAIRMAN, OVERSIGHT AND INVESTIGATIONS
ASIA, THE PACIFIC, AND NONPROLIFERATION

COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY:
VICE CHAIRMAN
SUBCOMMITTEES:
SPACE

Congress of the United States
House of Representatives

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AMI.BERA@MAIL.HOUSE.GOV

April 8, 2020

Timothy Roberts
U.S. EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, DC 20460

Re: Sac Metro Air District's Joint TAG Grant Application

Dear Mr. Roberts:

It is with great pleasure that I write to you regarding the Sacramento Metropolitan Air Quality Management District's (Sac Metro Air District) joint application to the U.S. EPA's 2019 Targeted Airshed Grant (TAG) Program.

Sac Metro Air District's joint proposal is focused on reducing particulate air pollution in the Sacramento region. The major elements include wood stove replacements, paving rural roads, chipping and composting vegetation, incentivizing the transportation of biomass, and replacing agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter, while meaningfully augmenting its resilience to catastrophic wildfires.

The U.S. EPA has determined this region to be among the top five most polluted areas relative to the 24-hour PM 2.5 National Ambient Air Quality Standard, rendering it eligible for TAG funding. This project will be administered throughout targeted communities to ensure that more Americans are living and working in areas that meet high air quality standards in accordance with EPA's FY 2018-2022 Strategic Plan.

I am proud to see multiple stakeholders coming together to pursue the shared regional goal of improving air quality. Thank you for your thorough and thoughtful consideration of Sac Metro Air District's joint proposal.

Be well,

Ami Bera

Ami Bera, M.D.
Member of Congress

CAPITOL OFFICE
STATE CAPITOL
SACRAMENTO, CA 95814
(916) 651-4004

CHICO DISTRICT OFFICE
2635 FOREST AVE., STE. 110
CHICO, CA 95928
(530) 879-7424

ROSEVILLE DISTRICT OFFICE
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ROSEVILLE, CA 95765
(916) 772-0571

YUBA CITY DISTRICT OFFICE
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YUBA CITY, CA 95993
(530) 751-8657

California State Senate

SENATOR
JIM NIELSEN
FOURTH SENATE DISTRICT

COMMITTEES
BUDGET & FISCAL REVIEW
VICE CHAIR
ELECTIONS & CONSTITUTIONAL AMENDMENTS
VICE CHAIR
GOVERNMENTAL ORGANIZATION
GOVERNANCE & FINANCE
VETERANS AFFAIRS

April 8, 2020

Mr. Timothy Roberts
United States Environmental Protection Agency/Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: Letter of Support for Environmental Protection Agency 2019 Targeted Airshed Grant

Dear Mr. Roberts:

I am writing to express my support for the joint application of the Sacramento Metropolitan Air Quality Management District (District) to the U.S. Environmental Protection Agency's (EPA) 2019 Targeted Airshed Grant Program (TAG).

Four air districts in the Sacramento region, Placer, Sacramento, El Dorado, and Yolo/Solano, are seeking the grant for funding up to $12 million to reduce particulate air pollution while augmenting regional wildfire resilience in the region. A key segment of the proposed project area is in Senate District 4, which I represent in the California State Legislature.

The joint proposal includes wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment.

It is my understanding these activities will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully contributing to the region's resilience to catastrophic wildfires. Because the EPA has determined that this region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for TAG funding.

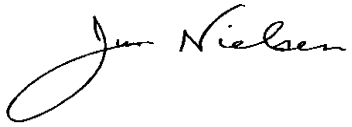
I am confident this program will be administered efficiently and consistently throughout the project area in accordance with EPA's FY 2018-2022 Strategic Plan, and support the outcomes that will result.

The actions being taken through the TAG grant will most certainly provide a meaningful benefit to those individuals living in the project area, but also for those who work and visit these five counties, and will contribute to the betterment of the overall quality of life in the region. Further, It will assist with meeting stringent air quality standards and boost fire prevention efforts that are critical in rural and wildfire prone areas in the district.

In conclusion, I am pleased to give my support to the Sacramento Metropolitan Air Quality Management District in its application for the 2019 Targeted Airshed Grant. If you have further questions, please contact my Deputy Chief of Staff, Rob Olmstead, at (916) 772-0571.

Again, thank you for your consideration of this request.

Sincerely,



JIM NIELSEN
Senator, Fourth District

JN:ln

STATE CAPITOL
SACRAMENTO, CA 95814
(916) 651-4001

California State Senate

SENATOR
BRIAN DAHLE
FIRST SENATE DISTRICT

April 8, 2020

Timothy Roberts
U.S. EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

I write to support the joint application of the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's 2019 Targeted Airshed Grant Program.

The major elements of The Sac Metro Air District's joint proposal are wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully augmenting its resilience to catastrophic wildfires. The twin goals of community safety and air quality make this proposal highly beneficial to the rural foothill communities of the air basin.

Because U.S. EPA has determined that the region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for Targeted Airshed Grant (TAG) funding. This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan to ensure that more Americans live and work in areas that meet high air quality standards.

Thank you for your careful consideration of this application. If you have any questions, please contact my District Director, Bruce Ross, at Bruce.Ross@sen.ca.gov.

Sincerely,

Brian Dahle

BRIAN DAHLE
Senator, 1st District

COMMITTEES
VICE CHAIR: APPROPRIATIONS
VICE CHAIR: GOVERNMENTAL ORGANIZATION
INSURANCE
HEALTH
WATER, PARKS AND WILDLIFE

Assembly
California Legislature

FRANK BIGELOW
ASSEMBLYMEMBER, FIFTH DISTRICT

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1 April 8, 2020

Timothy Roberts
U.S. EPA Headquarters
William
Jefferson
Clinton Building
1200
Pennsylvania
Ave., N.W.
Washington,
D.C. 20460

RE: Support for EPA-OAR-OAQPS-20-01

Dear Mr. Roberts,

As a representative for the 5th Assembly District, I write in support of the joint application of the Sacramento Metropolitan Air Quality Management District to the U.S. Environmental Protection Agency's 2019 Targeted Airshed Grant Program.

The major elements of The Sac Metro Air District's joint proposal are wood stove replacements, paving of unpaved rural roads, chipping and composting of vegetation, incentives for transportation of biomass, and replacement of agricultural equipment. Through these activities, this project will quantifiably reduce fine particulate matter (PM 2.5) in the Sacramento Federal PM 2.5 Nonattainment Area, while meaningfully augmenting its resilience to catastrophic wildfires.

Because U.S. EPA has determined that the region is among the top five most polluted areas relative to the 24-hour PM2.5 National Ambient Air Quality Standards (NAAQS), it is thus eligible for Targeted Airshed Grant (TAG) funding. This project will be implemented in accordance with EPA's FY 2018-2022 Strategic Plan in that the program will be administered efficiently and consistently throughout target communities to ensure that more Americans are living and working in areas that meet high air quality standards. This is additionally in line

with my interest in helping to reduce catastrophic wildfires in the State of California.

Thank you for your consideration of this application. If you have any questions, please reach out to my Capitol Office at 916-319-2005.

Sincerely,

Frank Bigelow
5th Assembly District

Attachment F. California Air Resources Board Woodstove Program Guidance

Woodsmoke Reduction Program

Program Guidelines

FISCAL YEAR 2018-2019 APPROPRIATION

May 21, 2019

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Woodsmoke Reduction Program is part of California Climate Investments (CCI), a statewide program that puts billions of cap-and-trade dollars to work reducing greenhouse gas emissions, strengthening the economy and improving public health and the environment—particularly in disadvantaged communities. The cap-and-trade program also creates a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution. CCI projects include affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, more sustainable agriculture, recycling and much more. Statute establishes investment minimums for disadvantaged and low-income communities and low-income households. For more information, visit *California Climate Investments.*[1]

Senate Bill 563[2] establishes the Woodsmoke Reduction Program (Program) to be administered by the California Air Resources Board (CARB) to promote the voluntary replacement of old wood-burning stoves with cleaner and more efficient alternatives. The bill also authorizes money from the Greenhouse Gas Reduction Fund (GGRF) to be allocated for incentives offered as part of the Program. The State Legislature committed $5,000,000 in fiscal year 2016-2017[3] and $3,000,000 in fiscal year 2018-2019[4] to CARB to incentivize replacement of old, uncertified wood-burning devices with cleaner options. The Program, administered by CARB, is being implemented by the California Air Pollution Control Officers Association (CAPCOA) in coordination with local air pollution control districts or air quality management districts (Districts). CAPCOA will determine how much funding will be available to each District participating in the Program. The Program implemented in each participating District is considered a Project while an individual woodstove replacement is called a change-out. CARB developed Program Guidelines (Guidelines) to help CAPCOA and Districts set up Projects that meet the State's statutory requirements and policy objectives for appropriations from GGRF. The first set of Guidelines, addressing the 2016-2017 appropriation, were published on September 9, 2017.[5] The current Guidelines address the 2018-2019 appropriation. The Program is designed to help households replace an uncertified wood stove or wood insert, or a fireplace used as a primary source of heat with a cleaner burning and more efficient device. The replacement devices emit less greenhouse gases (GHG) and other air pollutants; they also are less likely to start fires than old stoves that may have been improperly installed. The Program will offer incentives towards the purchase and installation of the qualifying device. California residents using uncertified wood stoves or wood inserts, manufactured before July 1, 1988, or fireplaces as a primary heat source in Districts awarded Program funds

[1] https://ww2.arb.ca.gov/our-work/programs/california-climate-investments
[2] Lara, Chapter 671, Statues of 2017.
[3] Assembly Bill (AB) 1613, Committee on Budget, Chapter 370, Budget Act of 2016, Item 3900-101-3228, Section 10, Provision 4.
[4] Senate Bill (SB) 856, Committee on Budget, Chapter 30, Budget Act of 2018, Item 3900-101-3228, Section 36, Provision 2.
[5] https://www.arb.ca.gov/planning/sip/woodsmoke/reduction_program.htm.

are eligible for this Program. The incentive amount will vary depending on the location of the residence and the household income, with some households qualifying for full replacement cost. The Program will include an outreach and educational component to ensure that households make informed decisions about how to burn and what to burn in order to maximize the efficiency of the device and minimize pollution. This Program will further the goals of California Health and Safety Code Division 25.5,[6] reduce GHG emissions, improve air quality, and protect the health, safety, and well-being of California residents.

These Program Guidelines apply to the Fiscal Year (FY) 2018-19 GGRF appropriations and will be updated in future years if the Program is reauthorized with additional funds. The replacement of existing wood burning devices with cleaner technologies provides an important opportunity to secure the co-benefit of reduced regional and near-source exposure to woodsmoke. Therefore, contingent on reauthorization and funds, future guidelines will continue to maximize GHG reductions and also prioritize particulate pollution reductions, while still addressing the need to provide applicants within low income communities or households funding for cleaner home heating options. This includes considering opportunities to include applicants from urban areas that exceed particulate matter air quality standards where wood burning may not be a primary heat source. Future guidelines can also consider administrative streamlining based on the experience gained through implementation.

I. PROGRAM GOALS AND OBJECTIVES

The Program furthers the goals of Health and Safety Code Division 25.5 and reduces GHG emissions by offering incentives toward the replacement of existing uncertified residential wood burning devices used for space heating with cleaner options. For the purpose of this Program, a stove refers to a permanently installed free-standing wood stove, pellet stove, natural gas stove, propane stove, or electric stove or one installed in a masonry fireplace cavity or other enclosure (commonly referred to as an insert). The Program will be funded through the appropriation of $3,000,000 in the FY 2018-2019 from the Greenhouse Gas Reduction Fund.[7] The Program, administered by CARB, will be implemented by CAPCOA in coordination with Districts. CAPCOA will determine how much funding will be available to each District participating in the Program. To be eligible for the Program, a homeowner or renter, for the purpose of this document referred to as an Applicant, must currently use an uncertified wood stove, wood insert, or fireplace as a primary heat source. The incentive amount will depend on where the property is located and Applicant's household income, with some households qualifying for full replacement cost. The Program will maximize benefits to households in disadvantaged or low-income communities and low-income households and has as a

[6] Appropriations from the GGRF must further the purposes of Health and Safety Code Division 25.5, added and amended by AB 32 (Global Warming Solutions Act of 2006, Pavley and Nuñez, Chapter 488, Statutes of 2006), SB 32 (Pavley, Chapter 249, Statutes of 2016), AB 197 (E. Garcia, Chapter 250, Statutes of 2016), and AB 398 (E. Garcia, Chapter 135, Statutes of 2017).

[7] Item 3900-101-3228 of the Budget Act of 2018, as amended by SB 856 (Committee on Budget, Chapter 30, Budget Act of 2018).

goal to distribute 75 percent of the total funding to these priority populations.[8] Applicants residing in a census tract identified as a disadvantaged[9] or low-income[10] community can qualify for higher incentives. Applicants residing outside of a census tract identified as a disadvantaged or low-income community, who can demonstrate low-income eligibility based on household income, can also qualify for higher incentives.[11] All other Applicants are eligible for lower incentives. Benefits to disadvantaged and low-income communities and low-income households will be evaluated using criteria listed on the CCI Quantification, Benefits, and Reporting Materials website.[12] Projects are expected to meaningfully address an important community need by reducing exposure to local environmental contaminants, such as toxic air contaminants and criteria air pollutants.

The existing uncertified wood stove, wood insert, or fireplace must be replaced with a certified wood stove, pellet stove, natural gas stove, propane stove, electric stove, or ductless mini-split heat pump. The Program will achieve GHG emission reductions from the increased efficiency and reduced emissions of the newly installed devices. Older, uncertified wood stoves are often inefficient, high-polluting, and may pose a fire risk. United States Environmental Protection Agency (U.S. EPA) certified wood stoves burn more cleanly and efficiently, thereby reducing greenhouse gas and particulate matter emissions. Replacing an uncertified wood stove, wood insert, or fireplace with a qualified replacement home heating option will reduce the overall GHG emissions. Co-benefits include significant and long-term reductions in emissions of criteria pollutants and toxic air contaminants, along with reduced fire risk.

The replacement device must be installed by a professional, appropriately licensed stove installer (Installer) and meet local fire and building codes. A professionally installed device will improve the health, safety, and comfort of all residents. To ensure reductions in emissions are permanent, any stove removed through this Program must be rendered permanently inoperable and recycled, if recycling is available in the area. The Program will include outreach and educational components to both inform residents

[8] Priority populations include residents of: (1) census tracts identified as disadvantaged by California Environmental Protection Agency (CalEPA) per SB 535; (2) census tracts identified as low-income per AB 1550; or (3) a low-income household per AB 1550.
[9] Disadvantaged community census tracts are identified by CalEPA per SB 535 (De León, Chapter 830, Statutes of 2012), and available at http://www.calepa.ca.gov/EnvJustice/GHGInvest/
[10] Low-income communities are defined as census tracts with a median household income at or below 80 percent of the statewide median household income or with a median household income at or below the threshold designated as low-income by Department of Housing and Community Development's State Income Limits adopted pursuant to the Health and Safety Code Section 50093 (AB 1550 (Gomez, Chapter 369, Statutes of 2016). Maps of low-income communities are available at https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm
[11] Low-income households are those with household incomes at or below 80 percent of the statewide median household income or with household incomes at or below the threshold designated as low-income by the Department of Housing and Community Development's list of state income limits adopted

pursuant to Section 50093. (AB 1550 (Gomez, Chapter 369, Statutes of 2016)) Districts will be responsible for verifying household income eligibility.
[12] Available at: https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials

about the benefits of switching to cleaner burning home heating devices and train them on the proper operation and maintenance to maximize the device efficiency and minimize pollutant emissions.

The Program implemented in each participating District will be considered a Project. The Project will comprise all of the change-outs, for which Program funds are being used, within the District's jurisdiction along with the administrative work required to implement them.

5 STOVE ELIGIBILITY AND PERFORMANCE STANDARDS

5.2 Existing Home Heating Devices

To be eligible for the Program, an Applicant must be currently relying on an operational uncertified wood stove or insert, or fireplace, as a primary source of heat in the residence.

An uncertified stove or insert is one that has not been certified by the U.S. EPA to comply with the performance and emission standards as defined in Title 40 Code of Federal Regulations, Part 60, Subpart AAA, February 28, 1988, or any subsequent revisions. In order to determine if the existing stove is uncertified, Applicant may do the following:

- Determine when the stove was installed. Stoves installed before July 1, 1988 do not comply with the particulate emission standards and therefore qualify for this Program.
- Check the stove model against the U.S. EPA current[13] and historical[14] list of certified wood heaters. If the stove's manufacturer and model is not on the current and historical lists, the stove is considered uncertified.
- Check the back of the stove for a certification label. Stoves which do not have any label describing particulate matter emission standards qualify for this Program. Wood stoves certified by the U.S. EPA to comply with any of the particulate emission standards are not eligible for replacement through this Program. These stoves will have a label, similar to that pictured in Figure 1, permanently affixed to them stating that the stove is certified to comply with the 1988, 1990, 2015, or 2020 U.S. EPA standards.

Applicants will determine the eligibility of their current wood stove. Applications will be reviewed by the District to determine if preliminary qualification requirements have been

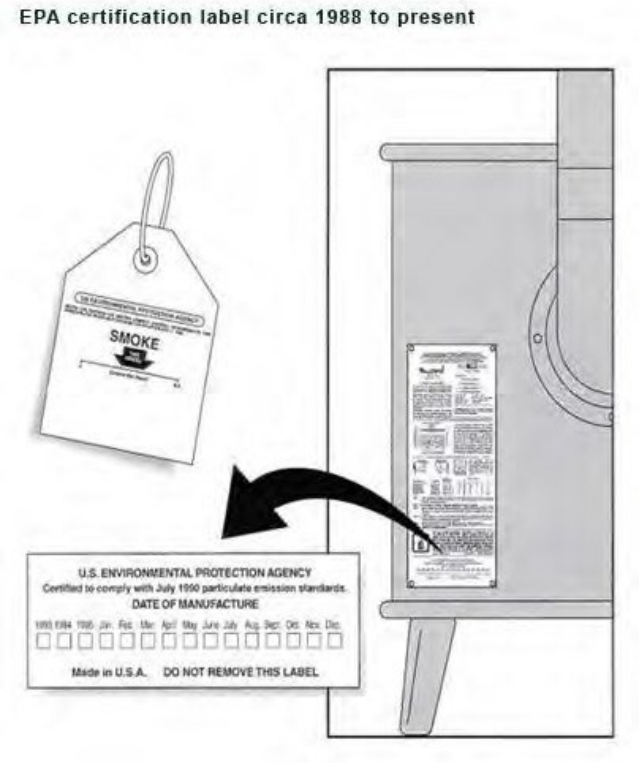
[13] Current list of U.S. EPA certified wood heaters: https://www.epa.gov/compliance/list-epa-certified-wood-stoves
[14] Historical list of U.S. EPA certified wood heaters: https://www.epa.gov/compliance/historical-list-epa-certified-wood-heaters

met. The stove's eligibility will be verified by the District or an Installer during an in-home estimate.

An Applicant using a fireplace as a primary source of heat could also qualify for this Program. Section III, Eligible Home Heating Replacements, includes more information on how to qualify for this type of change-out.

Only operational devices, currently installed in a residence, and used as a primary source of heat qualify for this Program. Applicants who remove the device prior to an in-home estimate will be disqualified.

Figure 1. U.S. EPA Stove Certification Label



B. Replacement Device

The uncertified wood stove or insert, or fireplace, must be replaced by a cleaner-burning and more efficient alternative. Table 1 lists Program-eligible replacement devices. Prior to May 15, 2020, wood heating devices with particulate matter emission rates not exceeding 2.0 grams/hour (g/hr), that are certified to either U.S. EPA "Step 1" or

"Step 2" New Source Performance Standards (NSPS) qualify for the Program.[15] Starting on May 15, 2020, only wood heating devices with particulate matter emission

[15] Both Step 1 and Step 2 stoves with certified particulate matter emission rates of no more than 2.0 grams/hour are eligible. The list of U.S. EPA certified wood heaters can be found at https://www.epa.gov/compliance/list-epa-certified-wood-stoves

rates not exceeding 2.0 grams/hours, that are certified to U.S. EPA "Step 2" NSPS, will be eligible for the Program.[16] The non-wood burning devices listed in Table 1 are eligible for the duration of the Program.

Table 1. Replacement devices eligible for the Program

Before May 15, 2020	On or after May 15, 2020
Wood stove, wood insert, pellet stove, or pellet insert with particulate matter emission rates not exceeding 2.0 g/hr, that are certified to either U.S. EPA "Step 1" or "Step 2" NSPS [17]	Wood stove, wood insert, pellet stove, or pellet insert with particulate matter emission rates not exceeding 2.0 g/hr, that are certified to U.S. EPA "Step 2" NSPS[18]
Natural gas stove or insert	
Propane stove or insert	
Electric stove or insert	
Ductless mini-split heat pump	

The replacement device must be permanently installed by a professional, appropriately licensed Installer participating in this Program. A list of participating Installers will be established by CAPCOA or each participating District. Self-installation of heating devices will not be allowed under this Program. Portable home heating devices, not permanently affixed to the home structure, are not eligible replacement options. Any building permits or other required approvals shall be obtained per local or State ordinances and shall be the responsibility of the Installer or the Applicant. Districts will be responsible for verifying that each change-out is permitted and inspected in accordance with State or local ordinances before payment is issued to the Installer or the Applicant.

III. ELIGIBLE CHANGE-OUTS

Applicants interested in upgrading their uncertified wood stove or wood insert, or fireplace to a U.S. EPA certified wood stove or other cleaner, more efficient heating device qualify for this Program if they meet all of the requirements listed below:

[16] The list of Step 2 compliant heaters can be found at https://www.epa.gov/compliance/list-epa-certified-wood-stoves. U.S. EPA has requested comment on postponing the compliance deadline for retail of non-Step 2-compliant heaters and pellet stoves and inserts (83 Fed. Reg. 61,574 (Nov. 30, 2018)). Regardless of any postponement of the compliance deadline, the Woodsmoke Reduction Program will only offer incentives toward change-outs with Step 2-compliant devices after May 15, 2020.

[17] Both Step 1 and Step 2 stoves with certified particulate matter emission rates of no more than 2.0 grams/hour are eligible. The list of U.S. EPA certified wood heaters can be found at https://www.epa.gov/compliance/list-epa-certified-wood-stoves.
[18] The list of Step 2 compliant heaters can be found at https://www.epa.gov/compliance/list-epa-certified-wood-stoves. U.S. EPA has requested comment on postponing the compliance deadline for retail of non-Step 2-compliant heaters and pellet stoves and inserts (83 Fed. Reg. 61,574 (Nov. 30, 2018)). Regardless of any postponement of the compliance deadline, the Woodsmoke Reduction Program will only offer incentives toward change-outs with Step 2-compliant devices after May 15, 2020.

- Currently use wood as a primary fuel;
- Use an uncertified wood stove or wood insert, or a fireplace, currently operational, as a primary source of heat;
- Select a replacement device which meets stove eligibility in Section II;
- Plan to have the replacement device professionally installed by a participating Installer;
- Agree to receive training on proper wood storage and wood burning practices (if applicable) and device operation and maintenance; and
- Surrender their old wood stove or insert to the Installer who will render it permanently inoperable and recycle it, if recycling is available in the area.

This Program provides incentives for one replacement per household. Households that previously received Program incentives are not eligible. The replacement device must be a primary source of heat in the house. The Program is available for residences occupied by owners or long-term renters. In the case of rental properties, formal approval from both the property owner and the renter will be required as part of the approval process. In order to qualify for an incentive, the owner will have to agree to not raise the rent of the unit for a period of two years or evict the unit's residents because of increased value of the unit due solely to the newly installed home heating device. Retroactive rebates are not available under this program, so Applicants who remove the old device or purchase a new replacement device prior to being approved for this Program will be disqualified. The old, uncertified device must be rendered permanently inoperable and recycled, if recycling is available in the area, before payment can be issued to the Installer.

Burning wood in a fireplace is very inefficient for home heating purposes; fireplaces are therefore not typically used as a primary source of heat. In rare situations, when an Applicant uses a fireplace as a primary source of heat, the Applicant may qualify for the Program. If the existing fireplace is structurally sound, the Program may offer an incentive to be used towards purchase and installation of a fireplace insert utilizing wood, natural gas, propane, or electricity. However, if the fireplace is lacking structural integrity, the incentive could be used towards the purchase of an eligible free-standing home heating device. In this case, the fireplace and chimney must be rendered permanently inoperable to prevent use of the fireplace. Verification of inoperability would be the responsibility of the District.

Installers interested in participating in this Program must agree to the Program's terms and conditions by signing an agreement with CAPCOA or the District. Each District will

establish their own requirements, but at a minimum, in order to participate in the Program, the Installer will be required to agree to the following:

- Abide by the terms and conditions of the Program;
- Unless verified by the District, verify that the old device and the replacement device qualify for the Program;

- Conduct professional installation of the qualified device in compliance with all applicable State, county, or city codes/ordinances;
- Provide residents with training on device operation and maintenance and, if applicable, for wood burning devices, best practices in wood storage and wood burning; and
- Render the old device inoperable and recycle it, if recycling is available in the area.

Only Installers who have a signed agreement with CAPCOA or the District will be eligible to participate in the Program. Installers will be responsible for ensuring that all installations are done in accordance with any applicable State, county, or city codes/ordinances, including obtaining any applicable permits and having the installation inspected. Agreements must include the components required by this document and should include key milestone dates and participant requirements for maintaining eligibility prior to Project completion.

IV. ELIGIBLE COST

Eligible change-outs costs include the cost of the new device including sales tax, installation including any parts, materials, permits, or labor required for the safe and legal installation of the new device, and removal and disposal of the old wood stove or insert. The Installer will be required to provide a base estimate for the installation of a basic model that will be safe, clean-burning, and efficient. Upgrades above the base estimate will be paid by the Applicant. The incentive structure will be determined by CAPCOA or each individual District but incentives can't exceed the actual total change-out cost and are limited to a maximum of $5,000 per property or household. Districts will pay the Installer (voucher model) or Applicant (rebate model) the approved incentive amount. Any additional balance due will be paid by the Applicant.

Applicants who remove the high-polluting device or purchase a new device prior to being approved for this Program will be disqualified from obtaining compensatory funds. Wood stoves or inserts designed exclusively for aesthetic and decorative use are not eligible for this Program.

All eligible costs must be supported by appropriate documentation. Any cost that is not directly related to the change-out, including cost of remodeling work beyond what is required to complete the change-out, is not eligible for an incentive. Total costs may not

exceed the $5,000 maximum allowed. Costs incurred outside of the performance period, indirect/overhead costs, and cost of food or beverages (e.g., served during outreach events) are not eligible for reimbursement. Indirect/overhead costs are expenses of doing business that are of a general nature and are incurred to benefit two or more functions within an organization. Examples of indirect costs include salaries and benefits of employees not directly assigned to work on the Program, functions such as personnel, business services, information technology, and salaries of supervisors. Examples of overhead costs include rent, utilities, and supplies.

The total cost of administering the Program (i.e., the total administrative costs incurred by both CAPCOA and Districts) cannot exceed $300,000, which is 10 percent of the total 2018-2019 appropriation.

5 ELIGIBILITY

Households using uncertified wood stoves, wood inserts, or fireplaces as a primary heat source are eligible for an incentive towards replacing their old heating device with a cleaner option. The incentive amount will be determined by each District in coordination with CAPCOA, but may not exceed a maximum of $5,000. The general structure of incentives must adhere to the following rules:

5.9 Low-income households and households located in disadvantaged or low-income communities will be eligible to replace their heating device for little or no cost. They will qualify for a higher incentive (Enhanced Incentive). The maximum allowable Enhanced Incentive level is $5,000;

5.10 All other households, regardless of their income, will qualify for a smaller incentive (Standard Incentive) to be applied towards the purchase and installation of the new device. CAPCOA, in coordination with the District, will determine the maximum allowable Standard Incentive level, not to exceed
$5,000; and

5.11 CAPCOA, in coordination with the District, will implement the Program with the goal of directing 75 percent of the funds for Enhanced Incentives to help low-income households and households in disadvantaged and low-income communities replace their old wood stoves for little or no cost. This goal could be accomplished in a variety of ways and Districts are encouraged to explore different options to assist in meeting this Program-wide goal. Examples of two possible scenarios could include:

- Conducting a District-wide solicitation during which all applications would be collected and reviewed and priority would be given to those Applicants qualifying for Enhanced Incentives.
- Implementing the Project in two phases. During the first phase, only applications from low-income households and households in

disadvantaged and low-income communities would be accepted. During the second phase, the Project would be open to all Applicants.

Every Applicant using an uncertified wood stove or fireplace as a primary source of heat for their home qualifies for a Standard Incentive without any need for income verification. To qualify for the higher Enhanced Incentive, the Applicant must reside in a disadvantaged or a low-income community or demonstrate a household income not exceeding a low-income threshold specified below. Income verification will not be required for Applicants residing in disadvantaged or low-income communities.

Applicants residing outside of disadvantaged and low-income communities wishing to be considered for Enhanced Incentives are required to demonstrate that their household income does not exceed one of the following thresholds:

1) 80 percent of the Statewide Median Household Income (MHI);[19] or

2) County-specific California Department of Housing and Community Development (HCD) low-income limits.[20]

Districts will be responsible for verifying household income eligibility. Districts can qualify an Applicant based on the higher allowable maximum income (80 percent MHI or HCD low-income limits).

For purposes of the Woodsmoke Reduction Program, there are multiple methods to demonstrate household income eligibility. Applicants may demonstrate eligibility by presenting pay stubs or tax returns for each person living in the residence to District personnel for verification and, if qualifying using the HCD low-income limits, reporting the number of people in the household.

Eligibility may also be established through proof of participation in an existing federal or State low-income assistance program, several examples of which are listed below. In cases where an Applicant chooses to demonstrate eligibility through participation in an alternate low-income program, Districts will work with CARB staff to verify that the alternate program's income limits do not exceed Enhanced Incentive income limits for their area.

- U.S. Department of Agriculture Women, Infants and Children (WIC) Program;
- U.S. Department of Health and Human Services Low Income Energy Assistance Program (LIHEAP);
- California Alternate Rates for Energy (CARE) Program with a participating California utility company.

VI. APPROVAL PROCESS

In order to participate in the Program, Applicants will be required to complete an application. Applicants must agree to provide information to the District and allow the District and/or Installer to verify that information. Applicants must agree to receive training on proper wood storage and wood burning practices (if applicable) and device operation and maintenance. The District will be responsible for verifying the following:

[19] U.S. Census Bureau, American Community Survey , 5-year Estimates available at: https://www.census.gov/quickfacts/table/PST045215/06

[20] California Department of Housing and Community Development Official State Income Limits available at: http://www.hcd.ca.gov/grants-funding/income-limits/state-and-federal-income-limits.shtml.

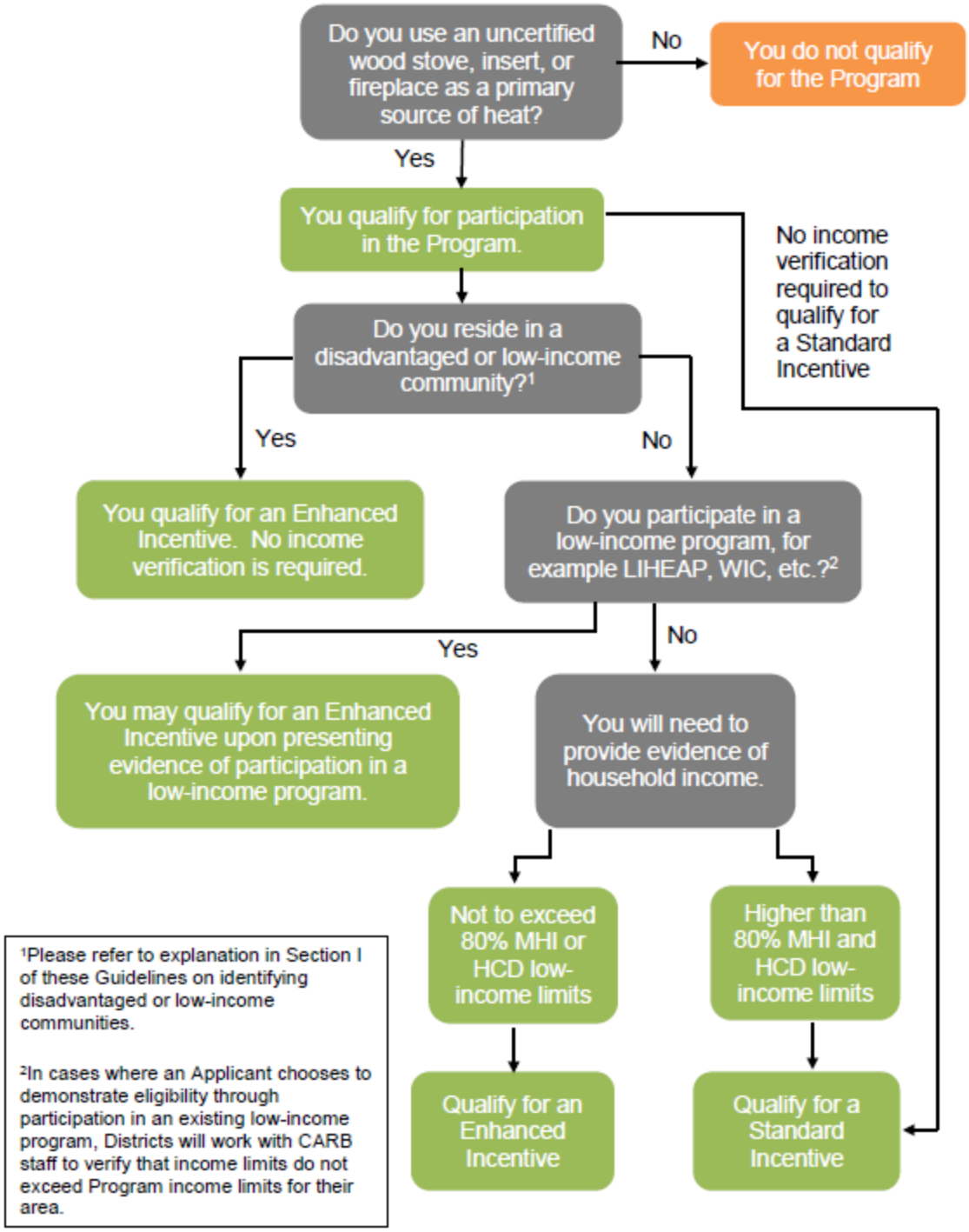
- Eligibility of the existing device - ensuring that the existing wood stove, wood insert, or fireplace[21] is uncertified, operational, and used as a primary heat source in the house;
- Eligibility of the replacement stove – ensuring that the replacement device is eligible for the Program as described in Section II; and
- If applying for the Enhanced Incentive, eligibility as a resident of a disadvantaged or low-income community or a low-income household.

The application will be reviewed to determine if the preliminary qualification requirements have been met. Figure 2 illustrates the approval process and helps determine Program eligibility. The District will notify the Applicant whether the application was approved for participation in the Program. Districts must inform Applicants that applications will be treated in accordance with Public Records Act requirements and that certain information, subject to those requirements, may be publicly disclosed.

Once approved, the Applicant will schedule an in-home estimate with a participating Installer. The Installer will verify the stove's eligibility and present an estimate to the Applicant. The District will have the flexibility to run the Program as a voucher or a rebate model. If a Program follows a voucher model, qualified Applicants are issued vouchers that provide an instant discount of the cost of purchase, installation, and disposal of a qualifying device. If a Program follows a rebate model, qualified Applicants are issued rebates after they submit the required documents showing that they have purchased a qualifying device, had it installed by a participating Installer, and properly disposed of their old appliance. Districts must verify that the old device was deemed permanently inoperable and recycled, if recycling is available in the area, before issuing payment for the change-out. Districts choosing to follow a rebate model must ensure that low-income households and households in disadvantaged and low-income communities are able to participate. This may require offering vouchers in lieu of rebates or administering the Project with a combination of rebates and vouchers.

[21] All fireplaces are considered uncertified heating devices.

Figure 2. Approval Process



VII. GHG REDUCTIONS

Switching from an uncertified wood stove or a fireplace to a U.S. EPA certified wood stove reduces GHG emissions as certified stoves are cleaner burning and more energy efficient. Design features in newer wood stoves promote more complete combustion, reducing emissions of methane, a GHG pollutant.[22] They also typically use a third less wood to produce the same amount of heat as an uncertified stove.[23] A one-third reduction in wood burning will further reduce GHG emissions by approximately the same amount. Switching from an uncertified wood stove to a natural gas, propane, or electric heater will typically reduce GHG emissions. In the absence of a mechanism to verify that the wood burned in an Applicant's primary heating device is waste material harvested pursuant to an approved timber management plan prepared in accordance with the Z'berg-Nejedly Forest Practice Act of 1973 or other locally or nationally approved plan and harvested for the purpose of forest fire fuel reduction or forest stand improvement, biogenic CO_2 is included in the calculation of GHG benefits for these devices.

VIII. OUTREACH AND EDUCATION

CAPCOA and the Districts will be responsible for promoting the Program and helping households understand the benefits of changing from an uncertified wood stove to a cleaner home heating device. Since the Program-wide goal is to distribute 75 percent of total funding to residents of disadvantaged and low-income communities and low-income households, the outreach should focus on reaching this segment of the population.

The Program requires an educational component to ensure that the new home heating devices, particularly wood stoves, are properly operated and maintained to maximize energy efficiency and achieve the lowest possible emission rates. With proper burning techniques and properly seasoned wood, the amount of wood used could be significantly reduced. While a new wood stove typically pollutes less than an old one, user operation is important for achieving estimated reductions. CAPCOA and the Districts will be required to ensure that each change-out is supplemented with a training component. This could be accomplished by having Installers train homeowners following the installation. Districts will be required to obtain verification of training.

[22] Residential wood stove emissions are in AP 42, Fifth Edition, Volume I, Chapter 1, External Combustion Sources, Section 1.10, web link: https://www3.epa.gov/ttn/chief/ap42/ch01/final/c01s10.pdf

[23] U.S. EPA Burn Wise Publication, How to Implement a Wood-Burning Appliance Changeout Program, September 15, 2014; web link: https://www.epa.gov/sites/production/files/2015-08/documents/howtoimplementawoodstovechangeout.pdf

IX. CO-BENEFITS

In many communities throughout the State, uncertified wood stoves are a major source of air pollution. Replacing these highly polluting and inefficient stoves with cleaner home heating options can significantly reduce emissions of fine particulate (PM2.5), black carbon, and toxic air contaminants. These emission reductions will vary depending on the type of the replacement device, with the natural gas, propane, or electric devices offering the greatest reductions. Certified wood stoves or inserts have significantly lower emissions compared to uncertified stoves. These emission reductions, however, could diminish due to improper operation or lack of proper maintenance. Reductions in black carbon, PM2.5, and toxic air contaminants will reduce the impacts of climate change and improve indoor and outdoor air quality and visibility. In some parts of the State, the PM2.5 co-benefit reductions could have a significant impact on a region's ability to attain ambient air quality standards.

Reductions in PM2.5 pollution will have significant short- and long-term health benefits. Short-term exposures to PM2.5 can aggravate lung disease, causing asthma attacks and acute bronchitis, and may also increase susceptibility to respiratory infections. Long-term exposures have been associated with reduced lung function and the development of chronic bronchitis and even premature death.

Consumers should be able to save approximately 20 percent of their annual fuel cost through the use of professionally installed, certified, high efficiency wood stoves.[24] Many old stoves are improperly installed, posing significant safety concerns, including health impacts and potential fires. Professional installation required under this Program will ensure that newly installed stoves meet local fire and building codes. If a replacement device is installed in a residence that does not have functional smoke and carbon monoxide detectors, the Program may pay for purchasing and installing new detectors. The Program may support the local economy and job creation by increasing demand for, and installation of, certified wood stoves and other clean heating devices.

X. KEY DATES AND DEADLINES

CARB posted the Program Guidelines for public review and comments on December 5, 2018. The public comment period closed on December 21, 2018 and comments were reviewed and incorporated into the Program Guidelines where appropriate. As a next step, CARB will draft grant agreements with CAPCOA and/or individual Districts. These agreements must be signed and fully executed before funds can be released. If CAPCOA acts as an intermediary between CARB and the Districts, it will be required to enter into separate agreements with the Districts. These separate agreements must ensure compliance with these Program Guidelines and any agreement between CAPCOA and CARB. Any work done prior to a District grant agreement being fully signed and executed will be ineligible for funding. The deadline

[24] Based on the difference in efficiency between uncertified and certified stove: https://www3.epa.gov/ttn/chief/ap42/ch01/final/c01s10.pdf

for executing all grant agreements is June 30, 2020 and the deadline for submitting requests for payment to CARB is April 1, 2022.

XI. REPORTING AND GHG QUANTIFICATION

CCI Funding Guidelines set tracking and reporting requirements for agencies that administer GGRF programs, such as CARB. Each District participating in the Program will be responsible for recordkeeping and providing CAPCOA and/or CARB with information necessary to fulfill Program reporting requirements. CAPCOA will be responsible for compiling the reports and submitting them electronically to CARB. All reports must be consistent with the CCI Funding Guidelines,[25] quantification methodologies,[26] reporting guidance,[27] and the requirements established in these Program Guidelines. The Program implemented in each participating District will be considered a Project with most of the reporting done on a Project basis. The Project will be comprised of all change-outs for which Program funds are being used, within the District's jurisdiction, along with the administrative work required to implement them. Some reported Project information will be publicly available on the CARB website, including the amount of funding spent on change-outs that benefit disadvantaged communities, low-income communities, and low-income households.

In order to document and calculate reductions in GHG, black carbon, and PM2.5 emissions, and document other co-benefits and benefits to disadvantaged communities, low-income communities, and low-income households, CAPCOA and/or Districts will be responsible for collecting and maintaining the following information for each change-out:

- Tracking number for each change-out;
- Location of change-out;
- Incentive amount and, if applicable, verification that Applicant qualifies for an Enhanced Incentive based on the location of the property in a disadvantaged or low-income census tract or Applicant's household income;
- Documents proving the change-out benefits a disadvantaged community, low-income community, or low-income household and description of how the change-out meets respective community need(s);
- Type of wood burning device being replaced (stove, insert, or fireplace);
- Replacement device type and model;
- Quantity of wood burned annually before replacement;
- Replacement device emission rates and efficiency (if available);
- Installation date;
- Copy of final permit (City, County, or State);
- Photographic evidence of change-out completion, including "before" and "after" photos showing the devices in relation to the room where they were/are installed;

[25] https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2018-funding-guidelines.pdf
[26] Available at www.arb.ca.gov/cci-quantification
[27] ibid.

- Verification of destruction of uncertified stove (including recycling if available locally) or, where applicable, verification of rendering fireplace and chimney permanently inoperable;
- Verification that the resident was trained on device operation and maintenance and, if applicable, following best practices in wood storage and wood burning for residential space heating;
- GGRF dollars spent; and
- Information on jobs and training opportunities created and whether employees are residents of disadvantaged or low-income communities or low-income households.

Documentation of each wood stove replacement must include all of the parameters above, which are necessary for quantifying the reductions. Record keeping and tracking will be retained by CAPCOA or the District for three years after the Project Closeout report is submitted.

Net GHG reductions from wood stove replacement will be calculated using the CARB approved GHG Quantification Methodology for Fiscal Year 2018-2019 available at the Cap-and-Trade Auction Proceeds Quantification Materials webpage.[28] CARB will also develop methodologies to quantify some additional Project co-benefits. CAPCOA will be responsible for performing calculations and reporting results to CARB as part of the reports outlined above.

XII. DISBURSEMENT OF FUNDS

Funds cannot be disbursed until there is a fully executed grant agreement between CARB and CAPCOA and/or the individual District. Only those actual and direct Program related costs incurred during the approved term of the grant agreement and as specified in the grant agreement budget will be eligible for payments.

Each District shall maintain an accounting system that accurately reflects fiscal transactions with the necessary controls and safeguards. The accounting system must retain itemized receipts and invoices for all Program funds for at least three years after final payment is made by CARB.

XIII. PROGRAM REVIEW

The State of California has the right to inspect all work and associated records at any time over the Project life. This right shall extend to any subcontracts, and CAPCOA and/or Districts shall include such access in all their contracts or subcontracts.

CARB shall review a sufficient number of Projects each year to ensure proper Program implementation. The District responsible for the Project selected for program review will

[28] https://www.arb.ca.gov/cci-quantification

be contacted at least 30 days in advance. The program review should include all books, papers, accounts, documents, photographs, and other records related to the Project for which Program funds were used. The District will be expected to assign an employee familiar with the Project and accounting procedures to assist the State reviewer and have the Project records, including cancelled warrants, readily available for inspection.

If the program review reveals that the District did not follow these Program Guidelines and/or the grant agreement, does not have proper documents to demonstrate following Program Guidelines and/or the grant agreement, or violated any State or federal law or policy, a corrective action plan will be put in place. The District will have three months to implement the corrective measures. A follow-up program review will be conducted to verify that the deficiencies are fully mitigated. If the corrective actions were not implemented or new problems were discovered during the follow-up program review, a second corrective action plan will be established. If the second follow-up program review is less than satisfactory, the grant agreement with that District will be terminated immediately and the District will be prohibited from receiving any future funding from this Program. The District may be required to fully or partially repay Program funds spent in violation of these Program Guidelines and/or the grant agreement.

The following are examples of Program deficiencies:

- Replacing a wood stove, wood insert, or fireplace not eligible for the Program;
- Installing a device not eligible for the Program;
- Issuing an Enhanced Incentive to an ineligible Applicant;
- Exceeding the maximum amount of $5,000 for a single change-out;
- Failing to properly document each change-out;
- Failing to properly dispose of the old stove; and
- Allowing an Applicant to install his/her replacement device.

If deficiencies are identified during a program review, CARB will be responsible for communicating them to the District, giving the District an opportunity to respond, and, if necessary, assist in drafting a corrective action plan. Districts must make every effort, including requesting assistance from CARB, if necessary, to ensure that the deficiencies are fully mitigated.

Attachment G. California Air Resources Board FARMER Program Guidance

FINAL:
Funding Agricultural Replacement Measures for Emission Reductions (FARMER)
Program Guidelines

Release Date: February 16, 2018
Approved: March 23, 2018

• TABLE OF CONTENTS

• EXECUTIVE SUMMARY

California's agricultural industry consists of approximately 77,500 farms and ranches, providing over 400 different commodities, making agriculture one of the State's most diverse industries. Producers, custom operators, first processors, and rental companies own and operate approximately 160,000 pieces of off-road, diesel-fueled, mobile agricultural equipment statewide, in addition to stationary equipment, and on-road vehicles used in agricultural operations. Even with increasingly more stringent emission standards on engine manufacturers, emissions from these vehicles and equipment are a significant source of air pollution. Reducing these emissions are necessary to meet federal ozone and particulate matter air quality standards, particularly in the San Joaquin

Valley where the agricultural sector is a vibrant and critical part to the local and state economy, but also contributes to the poor air quality.

Most agricultural vehicles and equipment are operated for several decades – sometimes because the equipment is only used seasonally, but also due to the equipment durability, and relatively low cost to maintain compared to the cost of purchasing new vehicles or equipment. Unpredictable weather, varying commodity prices, farm size, and other factors impact a farmer's ability to purchase new equipment. Because of the volatility of this sector, businesses are often reluctant to purchase new equipment unless absolutely necessary.

Natural turnover is not sufficient to meet California's clean air needs. The primary driver for increased turnover in the off-road agricultural sector is due to local, state, and federal dollars leveraged with substantial private investment. While our air district and agricultural industry partners have been diligent in continuing to make strides in turning over their vehicles and equipment, more investment is needed.

In recognition of the strong need and this industry's dedication to reducing their emissions, the State Legislature allocated $135 million to the California Air Resources Board (CARB or Board) from Fiscal Year (FY) 2017-18. The Legislature directed the use of the monies to "reduce agricultural sector emissions by providing grants, rebates, and other financial incentives for agricultural harvesting equipment, heavy-duty trucks, agricultural pump engines, tractors, and other equipment used in agricultural operations." CARB staff has developed the proposed Funding Agricultural Reduction Measures for Emission Reductions (FARMER) Program to meet the Legislature's objectives and help meet the State's criteria, toxic and greenhouse gas emission reduction goals. The FARMER Program Guidelines discuss the funding allocations for air districts, eligible project categories and criteria, program implementation details, and the justification for these investments.

CARB staff recommends that funds be allocated to local air districts to administer and staff is proposing a formula to distribute funds, based on statewide emissions from off-road, mobile agricultural equipment and air quality and attainment status.
Table ES-1 displays the proposed distribution to the local air districts. Staff proposes to allocate 80 percent to the San Joaquin Valley Air Pollution Control District because this district has a high concentration of emissions from vehicles and equipment used in the agricultural sector, a high proportion of disadvantaged communities, and is in extreme nonattainment with National Ambient Air Quality Standards for ozone. For the remaining 20 percent, staff proposes to distribute the funds through a formula based on each district's portion of emissions from farm equipment in the publicly available inventory and attainment status with National Ambient Air Quality Standards. Staff also proposes

combining funds into a shared pool for districts with less than one percent of the statewide emissions from farm equipment to access for FARMER Program-eligible projects.

- **Table ES-1: Proposed District Funding Allocations for FY 2017-18**

Air District	Proposed Funding Allocation
Bay Area	$1,990,800
Butte	$1,695,600
Colusa	$1,380,600
Eastern Kern	$737,000
Feather River	$2,257,800
Glenn	$1,453,200
Imperial	$1,186,200
Monterey Bay	$1,298,200
Sacramento Metro	$989,200
San Diego	$1,269,700
San Joaquin Valley	$108,000,000
San Luis Obispo	$906,800
Santa Barbara	$666,900
South Coast	$1,878,800
Tehama	$652,100
Ventura	$1,234,100
Yolo Solano	$1,830,900
Districts with less than 1 percent	$5,572,100

Once under grant agreement with CARB, air districts will be able to use their funding on a suite of projects that will turn over older vehicles, equipment, and engines used in

agricultural operations. These projects are based on cost-effectiveness, potential reduction of criteria pollutants and toxic air contaminants, contribution to regional air quality improvement, ability to achieve GHG reductions, and ability to promote the use of clean alternative fuels and vehicle technologies. Details of eligible project types are included in the proposed FARMER Program Guidelines.

For the first year of the FARMER Program, staff recommends directing investments primarily to agricultural projects that have been successfully implemented in other incentive programs, such as the Carl Moyer Program and the Air Quality Improvement Program. Utilizing this existing incentive program framework, at least initially, will help ensure that funds are spent efficiently and expeditiously. Further, should future funding

become available, CARB staff will continue to analyze and expand the FARMER Program to provide emission reductions while meeting the needs of the agricultural sector.

Eligible project types included in the FARMER Program will reduce criteria pollutants, toxic air contaminants, and GHG emissions from agricultural sources. Furthermore, agricultural regions are often surrounded by disadvantaged and low-income communities and employ many of the residents living in these communities. Addressing the air quality and climate change impacts of vehicles and equipment used in agricultural operations is a multi-year effort and the proposed FARMER Program Guidelines set the foundation for a long-term emission reduction program.

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1 INTRODUCTION

In September 2017, Assembly Bill (AB) 134 (Committee on Budget, Chapter 254, Statutes of 2017) and AB 109 (Ting, Chapter 249, Statutes of 2017) appropriated $135 million from the State Budget for Fiscal Year (FY) 2017-18 to the California Air Resources Board (CARB or Board) for the reduction of criteria, toxic, and greenhouse gas (GHG) emissions from the agricultural sector. CARB staff developed these proposed *Funding Agricultural Replacement Measures for Emission Reductions (FARMER) Program Guidelines* (Guidelines) to cover the three related sources of funding included in AB 134 and AB 109.

In both budget bills, the following vehicle and equipment categories are listed as eligible for funding:

- Agricultural harvesting equipment;
- Heavy-duty trucks;
- Agricultural pump engines;
- Tractors; and
- Other equipment used in agricultural operations.

The proposed Guidelines outline CARB's plans for expending these funds in a manner consistent with the legislative direction from the two bills, existing statutes, and regulations. The Guidelines describe district funding allocations, eligible project categories and criteria, program implementation details, and the justification for these investments.

1.1 The Need for Emission Reductions from the Agricultural Sector

California's agricultural industry consists of approximately 77,500 farms and ranches, producing over 400 different commodities, making agriculture one of the State's most diverse industries.[1] Producers, custom operators, first processors, and rental companies in the agricultural industry own and operate approximately 160,000 pieces of off-road, diesel-fueled, mobile agricultural equipment statewide, in addition to stationary equipment, such as agricultural pump engines, and on-road vehicles, such as heavy-duty trucks, used in agricultural operations.

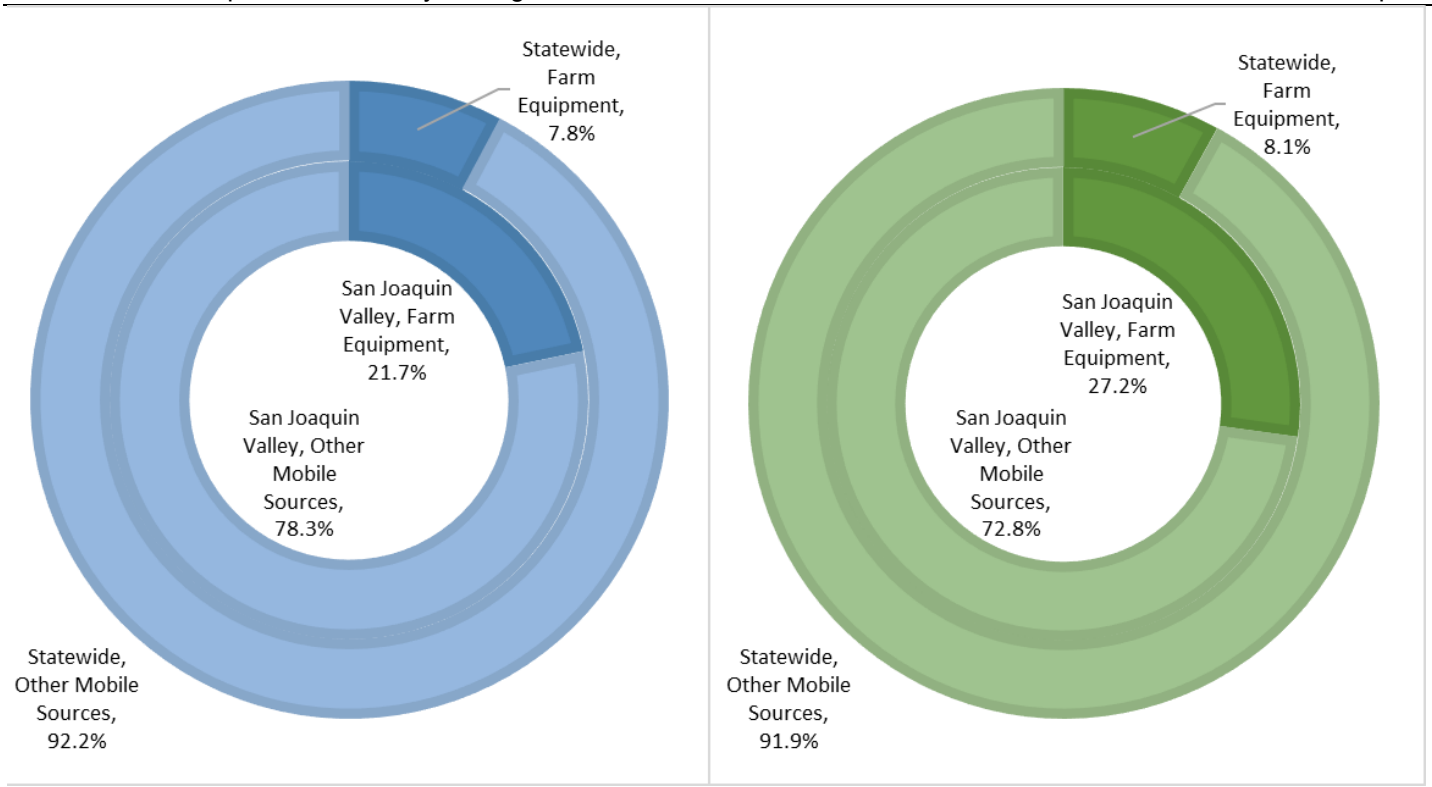
Emissions from agricultural equipment are a significant source of air pollution, especially in the San Joaquin Valley, and reducing these emissions is necessary to meet federal ozone and particulate matter (PM) air quality standards. Additionally, the agricultural

[1] *California Agricultural Statistics Review,* https://www.cdfa.ca.gov/statistics/PDFs/2016Report.pdf

industry is often one of the first to experience the impacts of climate change and is a critical component for addressing greenhouse gas emissions and climate impacts.
CARB's incentive programs and regulations are already reducing emissions from a wide variety of diesel engines, including trucks, buses, construction equipment, and fixed commercial generators and pumps. However, to meet federal air quality standards and California's climate change goals, a continuing transition to the cleanest technologies is necessary.

In 2018, off-road, mobile agricultural equipment is expected to account for 7.8 percent of the oxides of nitrogen (NOx) emissions from mobile sources and 8.1 percent of the PM 2.5 emissions (particulate matter that is 2.5 microns or smaller) from mobile sources statewide, as shown in Figures 1 and 2 below.[2] In the San Joaquin Valley, off-road, mobile agricultural equipment plays a significant role in the air quality challenges due to the region's large agricultural economy. In the current emissions inventory, off-road, mobile agricultural equipment accounts for over 21.7 percent of the NOx emissions from mobile sources and 27.2 percent of the PM 2.5 emissions from mobile sources in the San Joaquin Valley air basin, also shown below.

- **Figure 1: NOx Emissions Inventory Figure 2: PM Emissions Inventory**



[2] ARB's Mobile Source Emissions Inventory – Off-Road Diesel Vehicles, https://www.arb.ca.gov/msei/ordiesel.htm

Although increasingly stringent new engine standards for off-road equipment will reduce emissions from mobile agricultural equipment over time, most mobile agricultural equipment is operated for several decades due to the equipment's durability and relatively low cost to maintain. Because of the volatility of the agricultural sector, businesses are often reluctant to purchase new equipment unless absolutely necessary. Unpredictable weather, varying commodity prices, farm size, and other factors impact a farmer's ability to purchase new equipment. Thus, natural turnover is not sufficient to meet California's clean air needs.

As a result, incentives for purchasing the cleanest available vehicles and equipment are crucial for achieving the additional criteria, toxic, and greenhouse gas emission reductions from the agricultural sector that are necessary to meet National Ambient Air Quality Standards in nonattainment areas, California's climate change goals, and greenhouse gas emission reduction targets. Most farms are also surrounded by disadvantaged and low-income communities and employ many of the residents living in these communities. Further, emission reduction benefits from agricultural vehicles and equipment will assist in meeting the goals of AB 617 (Garcia, Chapter 136, Statutes of 2017), which addresses criteria pollutants and toxic air contaminants at the community level. Addressing the air quality impacts of vehicles and equipment used in agricultural

operations is a multi-year effort and the proposed FARMER Program Guidelines sets the foundation for a long-term emission reduction program.

3

2 GUIDING PRINCIPLES

The Legislature appropriated funding to CARB for local assistance from three sources: $85 million from the Greenhouse Gas Reduction Fund (GGRF), $15 million from the Air Quality Improvement Fund (AQIF), and $35 million from the Alternative and Renewable Fuel and Vehicle Technology Fund (ARFVTF). AB 109 and AB 134 direct that the funds shall be used to:

Reduce agricultural sector emissions by providing grants, rebates, and other financial incentives for agricultural harvesting equipment, heavy-duty trucks, agricultural pump engines, tractors, and other equipment used in agricultural operations.

The Legislature directed the use of monies from the three funds for identical purposes, "notwithstanding" other statutory requirements. Such legislative direction generally requires administrative agencies to carry out the Legislature's new intent, while giving effect to applicable existing statutory provisions. CARB understands the Legislature to have directed CARB to establish a combined program addressing the three sources of monies, while designing the new program in light of the statutory requirements ordinarily applicable to the underlying funds, to the extent consistent with this new direction.

The timetable and expenditure deadlines for these projects are demanding for implementation of a new program. Funds must be encumbered by June 30, 2019, and liquidated by June 30, 2021. This section of the Guidelines discusses how CARB will implement the Legislature's mandate, while supporting the underlying purposes of the three funds: GGRF, AQIF, and ARFVTF.

2.1 EMISSION REDUCTIONS FROM AGRICULTURAL OPERATIONS

In AB 134 and AB 109, the Legislature appropriated funding to reduce agricultural sector emissions by providing financial incentives for equipment and vehicles used in agricultural operations. CARB interprets the term "agricultural sector emissions" to allow for reductions of criteria, toxic, and GHG pollutants, consistent with the Health and Safety Code's (HSC) broad definition of "air pollutant."[3]

The overarching implementation priority for the first year of the FARMER Program is directing agricultural investments to support deployment of advanced technologies and cleaner diesel technologies needed to meet California's State Implementation Plan (SIP) and climate change goals. These investments may be considered for SIP credit

[3] *See* HSC, § 39013.

when the emission reductions from these projects are surplus, quantifiable, enforceable, and permanent, as defined below.

- "Surplus" means emission reductions that are not otherwise required by any federal, state, or local regulation, or other legal mandate, and are in excess of the baseline emission inventory, attainment year, and progress milestone year forecasts that include adopted regulations.

- "Quantifiable" means emission reductions can be reliably determined through the use of well-established, publicly available emission factors and calculation methodologies, as outlined in current Carl Moyer Program Guidelines[4] and the proposed FARMER Program Guidelines.

- "Enforceable" means emission reductions are enforceable if the incentive program guidelines include provisions for ensuring the following:
    - The emission reductions are independently and practicably verifiable through reporting, inspections, monitoring, and other mechanisms;
    - Incentive program requirements are defined through legally binding contracts, including identifying the party or parties responsible for ensuring that emission reductions are achieved;
    - Funding recipients are obligated to provide all records needed to demonstrate that emission reductions are achieved; and
    - The air district provides public access to all emissions-related information for reductions claimed.

- "Permanent" means actions are taken to physically destroy or disable forever the older, dirtier agricultural equipment or vehicle to ensure the reduction of emissions for the duration of the project life.

For the FARMER Program, staff proposes funding vehicle and equipment projects that are used in "agricultural operations," as defined by the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Regulation).[5] The definition of "agricultural operations" is, as follows:

"Agricultural Operations" means (1) the growing or harvesting of crops from soil (including forest operations) and the raising of plants at wholesale nurseries, but not retail nurseries, or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or

[4] https://www.arb.ca.gov/msprog/moyer/guidelines/current.htm.

[5] Title 13, California Code of Regulations (CCR), § 2449.

instruction by an educational institution, or (2) agricultural crop preparation services such as packinghouses, cotton gins, nut hullers and processors, dehydrators, and feed and grain mills. Agricultural crop preparation services include only the first processing after harvest, not subsequent processing, canning, or other similar activities. For forest operations, agricultural crop preparation services include milling, peeling, producing particleboard and medium density fiberboard, and producing woody landscape materials.

Consistent with the Off-Road Regulation, a vehicle or equipment that is used for both agricultural and nonagricultural operations is considered to be a vehicle engaged in agricultural operations only if over half of its annual operating hours are for agricultural operations.

2.2 THE GOALS OF AB 109 AND AB 134 AND OF AQIF, ARFVTF, AND GGRF

AB 109 and AB 134 direct CARB to develop a new program focused on vehicles and equipment engaged in agricultural operations using funds that already broadly support emission reductions programs. To develop this new program consistent with the Legislature's direction to use each fund for the same purpose to reduce agricultural emissions, CARB followed the usual requirements for AQIF, ARFVTF, and GGRF to the extent that they can be applied in this new context, while developing appropriate new requirements to further support the Legislature's intent.

Because the funds, and their governing statutes, focus on reducing air pollution and supporting the use of innovative fuels and technologies for this purpose, they are appropriate sources of funding for the agricultural emission reductions program, FARMER. AQIF, ARFVTF, and GGRF governing statutes generally support emission reductions of the sort that the Legislature has directed CARB to reduce from agricultural sources. Thus, CARB has based its program design upon the relevant statutes to the maximum extent possible to aid in administration and to implement the Legislature's direction.

AB 109 and AB 134 direct CARB to fund projects that will "reduce agricultural sector emissions by providing grants, rebates, and other financial incentives for agricultural harvesting equipment, heavy-duty trucks, agricultural pump engines, tractors, and other equipment used in agricultural operations."[6] CARB will fund projects that can

[6] CARB notes that AB 109 explicitly directs that "agricultural pump equipment" projects be funded from AQIF and ARFVTF monies, even though those funds ordinarily focus upon vehicle and fuel projects. This direction is consistent with earlier legislative direction to fund agricultural pump programs through the similar

Moyer Program. (*See* AB 923 (Firebaugh, Statutes of 2004) & H&SC § 44275(a)(7)). As the Legislature determined at that time, vehicles and agricultural sources emit the same air pollutant

accomplish these goals if they are also all consistent with the project categories listed in AQIF and ARFVTF statutes and are consistent with the requirements of AQIF, ARFVTF, and GGRF governing statutes.

AQIF and ARFVTF statutes list authorized project types, whereas GGRF statutes do not. CARB has identified project types listed in the AQIF and ARFVTF statutes that would serve the Legislature's purposes for the FARMER program. These project types are described in more detail in Section 3.2 – Eligible Project Categories.

- **CALIFORNIA CLIMATE INVESTMENTS AND GREENHOUSE GAS REDUCTION FUND**

California Climate Investments (CCI) is a statewide program that puts Cap-and-Trade allowance auction and sale proceeds to work reducing GHG emissions, strengthening the economy, and improving public health and the environment – particularly in disadvantaged communities.

The statutes governing CCI establish a two-step process for allocating funds to State agencies to invest in GHG-reducing projects. The Department of Finance, in consultation with CARB, is required to submit to the Legislature a three-year Investment Plan identifying proposed investments of auction proceeds, which are placed in the GGRF. Funding is then appropriated to State agencies from GGRF by the Legislature through the annual Budget Act, consistent with the Investment Plan.

AB 398 (Garcia, Chapter 135, Statutes of 2017) provides additional direction from the Legislature on priorities for investing auction proceeds. Those priorities are:

- Air toxic and criteria air pollutants from stationary and mobile sources;
- Low- and zero-carbon transportation alternatives;
- Sustainable agricultural practices that promote the transitions to clean technology, water efficiency, and improved air quality;
- Healthy forests and urban greening;
- Short-lived climate pollutants;
- Climate adaptation and resiliency; and
- Climate and clean energy research.

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emissions, so reducing emissions from either set of sources collectively reduces pollution burden, and hence future regulatory needs from either source category. (*See, e.g.*, AB 923, Sec. 1, finding that "motor vehicle owners" must contribute to a "fair and balanced funding program" to reduce emissions, including on agricultural sources). Accordingly, vehicle fee funds may properly be used to address agricultural source

emissions to reduce this jointly-created and inherently-linked pollution problem, consistent with requirements of HSC § 44271(a)(5) and Article XIX of the California Constitution.

In addition to facilitating reduction of GHG emissions, CARB's FARMER Program aligns well with these priorities. Funding sustainable agricultural practices that promote the transitions to clean technology and improved air quality is the main driver for this program, with toxic and criteria air pollutant reductions from stationary and mobile sources as co-benefits.

- **GHG Emission Reductions**

AB 1532 (Pérez, Chapter 807, Statutes of 2012) requires that Cap-and-Trade auction proceeds be used to facilitate the achievement of GHG reductions in California and specifies additional co-benefits to consider. The FARMER Program will facilitate the achievement of GHG reductions and other co-benefits through incentivizing the replacement of the legacy, diesel agricultural fleet with zero-emission or the cleanest available technologies.

- **GGRF Reporting and Recordkeeping Requirements**

SB 1018 (Budget and Fiscal Review Committee, Chapter 39, Statutes of 2012) set accountability requirements to help ensure that all GGRF expenditures facilitate the achievement of GHG reductions and further the purposes of AB 32 (Núñez, Chapter 488, Statutes of 2006). Details on reporting and recordkeeping requirements for the FARMER Program are included in Section 3.3 – Reporting and Section 4.3 – Audit and Program Review Procedures.

SB 1018 also requires State agencies that receive GGRF monies to prepare an expenditure record documenting the use of the funds. CARB will prepare an expenditure record for this program, consistent with SB 1018, that describes:

6 The proposed use of GGRF monies;
7 How a proposed expenditure will further the regulatory purposes of AB 32 and related statutes;
8 How a proposed expenditure will contribute to achieving and maintaining GHG emission reductions;
9 How CARB considered the applicability and feasibility of other non-GHG reduction objectives; and
10 How CARB will document the result achieved from the expenditure.

- **2.3.3 Disadvantaged Community, Low-Income Community, and Low-Income Household Investment Requirements**

SB 535 (de León, Chapter 830, Statutes of 2012) established the original requirements relating to the investment of auction proceeds in disadvantaged communities in order to provide economic and health benefits to these communities. In 2016, AB 1550 (Gomez,

Chapter 369, Statutes of 2016) revised these requirements, increasing the share of the State's auction proceeds that must be invested within disadvantaged communities and adding new requirements to direct additional investments to low-income communities and low-income households. AB 1550 requires at least 25 percent of auction proceeds be invested for projects within and benefiting disadvantaged communities; 5 percent for projects within and benefiting low-income communities or benefiting low-income households statewide; and 5 percent for projects within and benefiting low-income communities, or low-income households, that are within a half mile of a disadvantaged community. For the FARMER Program, CARB staff recommends allocating 50 percent of the total funds for projects within and benefiting disadvantaged communities and 5 percent for projects within and benefiting low-income households, based on the CalEnviroScreen 3.0 model.[7] To maximize AB 1550 benefits, CARB staff is considering options such as additional outreach and assistance for small growers in disadvantaged and low-income communities. A discussion of the steps CARB is taking to maximize AB 1550 benefits is included in Appendix B.

- **2.3.4 CCI Program Guidance**

In 2015, CARB approved the *Cap-and-Trade Auction Proceeds Funding Guidelines for Agencies that Administer California Climate Investments* (GGRF Funding Guidelines) establishing the requirements that State agencies receiving Cap-and-Trade auction proceeds must follow as they implement their programs. These guidelines define criteria for determining whether projects qualify as being located in and benefiting a disadvantaged community. The guidelines also identify approaches for implementing State agencies to maximize benefits to disadvantaged communities, while recognizing additional priorities identified by disadvantaged communities (in addition to reducing GHG emissions) that State agencies should strive to achieve with their investments. In late 2016, CARB published a Funding Guidelines Supplement for FY 2016-17 Funds.[8] In fall 2017, CARB published 2017 Draft Funding Guidelines for Agencies that Administer California Climate Investments that reflect the legislative requirements of AB 1550 and feedback from stakeholders on the existing program from prior years of implementation.[9]

CARB is now in the process of updating the GGRF Funding Guidelines to address legislation passed in 2017 and FY 2017-18 appropriations. On February 2, 2018, CARB released a discussion document to provide an overview and solicit comments on

[7] http://calepa.ca.gov/EnvJustice/GHGInvest/.

[8] https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/final_supplemental_ggrf_funding_guidelines_12_30.pdf.

[9] https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/fundingguidelines.htm.

anticipated changes.[10] The FARMER Program will be implemented in accordance with all requirements of the revised guidelines.

- **AB 118: AQIF AND ARFVTF**

In 2007, AB 118 (Núñez, Chapter 750, Statutes of 2007) created AQIF, along with the Air Quality Improvement Program (AQIP), a mobile source incentive program that focuses on reducing criteria pollutant and diesel particulate emissions with concurrent reductions in GHG emissions. AB 118 also created ARFVTF, along with the Alternative and Renewable Fuel and Vehicle Technology Program, an incentive program that focuses on developing and deploying innovative technology and alternative and renewable fuels to help attain the State's climate change policies.

In 2013, AB 8 (Perea, Chapter 401, Statutes of 2013) reauthorized the fees that support AQIF and ARFVTF through 2023 and set requirements for CARB to provide preference to projects with higher benefit-cost scores when considering projects for funding from AQIF and ARFVTF.

ARFVTF and AQIF statutes also provide information on projects that may be funded. In addition to being consistent with the Legislature's direction in AB 109 and AB 134 and with GGRF guidelines, projects funded under the FARMER Program should also fit into one of the following categories, drawn from HSC § 44272(e) and HSC § 44274(c):[11]

- Infrastructure Projects: Projects to develop alternative and renewable fuel infrastructure, fueling stations, and equipment, and infrastructure projects that promote alternative and renewable fuel infrastructure development connected with existing fleets, public transit, and existing transportation corridors, including physical measurement or metering equipment and truck stop electrification.

- Emissions control technologies projects: Projects to develop and improve light-, medium-, and heavy-duty vehicle technologies that provide for better fuel efficiency and lower GHG emissions, alternative fuel usage and storage, or emission reductions, including propulsion systems. This also includes on-road and off-road equipment projects that are cost-effective, and projects that provide mitigation for off-road gasoline exhaust and evaporative emissions.

[10] https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/funding-guidelines-discussiondoc-2018.pdf.

[11] Please consult the listed statutory sections, rather than relying solely on these paraphrased summaries, for full project type descriptions. Please note that project categories funded by the AQIF and ARFVTF as a general matter, but inconsistent with the Legislature's direction in AB 109 and AB 134, have been omitted.

- Fleet retrofit projects: Programs and projects to retrofit medium- and heavy-duty on-road and off-road vehicle fleets with technologies that create higher fuel efficiencies, including alternative and renewable fuel vehicles and technologies, idle management technology, and aerodynamic retrofits that decrease fuel consumption. Incentives for medium- and heavy-duty vehicles and equipment mitigation are also included.

- Small engine projects: Incentives for small off-road equipment replacement to encourage consumers to replace internal combustion engine lawn and garden equipment.

Within these categories, CARB staff has conducted an analysis, consistent with AB 8, to determine the appropriate classes of projects for the FARMER Program. The details of this analysis are discussed in Appendix A of these Guidelines.

The statutes require that projects funded by AQIF and ARFVTF must complement, and not interfere with, criteria and toxics pollution control efforts, and maintain or improve upon emission reductions in the SIP and relevant fuels regulations. Projects must be additive to those already required by law,[12] and must be consistent with any established sustainability goals, leverage additional funds where possible, produce quantifiable benefits,[13] and be consistent with other applicable legal requirements. The FARMER Program Guidelines serve as the funding plan and guidelines required by statute.

2.5 PROJECT SELECTION AND ASSESSMENT PROCESS

The Legislature has directed CARB to ensure funds are encumbered by June 30, 2019 and expended by June 30, 2021. Because of this timeline, CARB has worked to design a process to assess potential projects that can meet the Legislature's goals while maintaining the core project assessment criteria set forth in the ARFVTF and AQIF statutes (the GGRF statutes do not include such criteria). The AQIF and ARFVTF statutes provide that assessment and selection of potential projects should consider "benefit-cost scores."[14] Additional project selection criteria can also be used to further assess project types. Generally, these scores and criteria are used as part of a "competitive process for the allocation of funds."[15]

[12] *See* HSC, § 44271(b) & (c)).
[13] *See* HSC § 44271(a)).
[14] *See* HSC § 44270.3, 44271(a)(2)).
[15] *See* HSC, § 44271(a)(2)).

Certain aspects of the competitive process that are usually used for AQIF and ARFVTF, including an extended solicitation period, are not consistent with the Legislature's direction for the FARMER Program, and are therefore inapplicable as written.[16] The time required for a full grant solicitation process, combined with the complexity of agricultural source categories and limited window provided for the encumbrance and expenditure of funds renders such a process inconsistent with AB 109 and AB 134's clear direction. AB 109 and AB 134 direct CARB to fund agricultural source categories that typically require specialty or custom-built vehicles and equipment, resulting in an extended timeframe before the vehicles and equipment are delivered and funds can ultimately be expended. Because of the seasonality of agricultural operations, agricultural businesses are often reluctant to purchase new vehicles and equipment during growing seasons, further limiting the timeframe to expend funds.

However, CARB recognizes the importance of ensuring that the projects funded are consistent with the goals of the statutes, and that the identified project types would have been selected through a full competitive process had there been time for one to occur. As such, CARB has developed appropriate benefit-cost scores, which take into account the cost-effectiveness calculation methodologies set in the 2017 Carl Moyer Program Guidelines, as well as key factors that demonstrate advanced technologies. CARB has conducted an analysis of the project categories that may be funded under the FARMER Program to ensure that each project type has an acceptable benefit-cost score and is consistent with, and can support, other statutory criteria that may also generally be used to assess projects supported by these funds.

These additional criteria, as stated in HSC § 44272(c), and HSC § 44274(b), include:

- The project's ability to promote cleaner vehicle technologies and clean fuels used in covered vehicles.

- The project's ability to drive new technology adoption and market transformation, especially to support the widespread use of low carbon or zero-emission technologies and vehicles.

- The project's ability to reduce criteria air pollutants and air toxics and reduce or avoid multimedia environmental impacts and the project's contribution to regional air quality improvement.

[16] *See People v. Fuentes*, 1 Cal. 5th 218, 227 (2016)).

IX. The project's consistency with existing state climate change policy and low carbon fuel standards and the project's ability to achieve greenhouse gas benefits in addition to criteria pollutant or air toxic emission reductions.

X. The project's ability to support the California economy by promoting California-based technology firms, jobs, and businesses and to enhance a workforce utilizing clean technologies and fuels.

XI. The project's ability to support a sustainable landscape and sustainable resource use.

XII. The project's ability to leverage private funds.

The Legislature directs CARB to fund agricultural vehicle and equipment projects, similar to projects historically funded through AQIP. Therefore, CARB analyzed potential project types and categories based on benefit-cost scores and the applicable additional criteria mentioned above, consistent with the AB 8 analysis in the annual Low Carbon Transportation Investments and AQIP Funding Plan.[17] Based on this analysis, staff recommends funding heavy-duty truck replacements, mobile off-road farm equipment replacements, agricultural irrigation pump replacements, zero-emission agricultural utility terrain vehicles (UTV), and the Off-Road Mobile Agricultural Equipment Trade-Up Pilot Project (Ag Trade-Up Pilot Project). These project categories are discussed in Chapter 3 of these Guidelines. Assumptions and results for the AB 8 analysis are included in Appendix A.

For the FARMER Program, CARB intends to include only project categories that would be selected in a competitive process, and are consistent with the project types identified by the Legislature in AB 109 and AB 134. Additionally, districts are encouraged to select projects within these categories that provide higher benefit-cost scores and consider additional project assessment criteria.

[17] https://www.arb.ca.gov/msprog/aqip/fundplan/fundplan.htm.

3 PROGRAM FRAMEWORK

As discussed earlier, the overarching implementation priority for the first year of the FARMER Program is directing investments to agricultural projects that can be implemented through existing incentive program framework to ensure that funds are spent efficiently and expeditiously. Since the late 1990s, CARB and the local air districts have partnered to successfully administer over $3 billion in incentive funds to clean up over 100,000 heavy duty engines. To continue this partnership and provide

local assistance throughout the State, staff proposes to work with local air districts to administer and implement the projects.

3.1 Distribution of Funds

Staff proposes to allocate 80 percent of FARMER Program funding to the San Joaquin Valley Air Pollution Control District (SJVAPCD) due to the district's high agricultural activity, extreme nonattainment status with National Ambient Air Quality Standards for ozone, and large population affected by harmful emissions, as compared to other districts. For the remaining 20 percent of FARMER Program funding, CARB staff proposes the following formula to distribute the funds among local air districts. To help ensure the funds are distributed equitably among districts, the formula will distribute the remaining funds based on each district's statewide emissions from farm equipment[18] and each district's air quality and current attainment status with National Ambient Air Quality Standards.

All districts except for SJVAPCD will be included in this formula to determine the appropriate funding levels. Districts with at least one percent of the statewide emissions from farm equipment will have a line item allocation based on the results of this distribution formula. However, there is still a need for agricultural emission reductions in districts with less than one percent of the statewide emissions from farm equipment, therefore, staff recommends combining these districts' funding into a shared pool to be administered by the California Air Pollution Control Officers' Association (CAPCOA) or one air district for FARMER Program-eligible projects. The administration of this shared pool of FARMER Program funding is described in Section 3.1.1 – Shared Allocation for Districts with Less than One Percent.

With this proposed formula for the districts other than SJVAPCD, 75 percent of the funds will be distributed based on each district's share of statewide emissions from farm equipment and 25 percent of the funds will be distributed based on each district's air quality and attainment status. To distribute funds based on air quality and attainment

[18] Based on data from the California Emissions Projection Analysis Model (CEPAM). https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php

status, the formula uses a "severity point" system, similar to the Carl Moyer Program, which provides districts points on a scale from one to seven for attainment with the 2008 ozone standard, one point for districts with PM emissions exceeding 1,000 tons, and one point for districts that are impacted by emissions transported from Mexico. The points are added up and then funds are distributed based on each district's share of points.

Table 1 shows the FY 2017-18 funding allocations for air districts based on this proposed formula.

- **Table 1: Proposed District Funding Allocations for FY 2017-18**

Air District	Proposed Funding Allocation
Bay Area	$1,990,800
Butte	$1,695,600
Colusa	$1,380,600
Eastern Kern	$737,000
Feather River	$2,257,800
Glenn	$1,453,200
Imperial	$1,186,200
Monterey Bay	$1,298,200
Sacramento Metro	$989,200
San Diego	$1,269,700
San Joaquin Valley	$108,000,000
San Luis Obispo	$906,800
Santa Barbara	$666,900
South Coast	$1,878,800
Tehama	$652,100
Ventura	$1,234,100
Yolo Solano	$1,830,900
Districts with less than 1 percent	$5,572,100

Upon Board approval of the FARMER Program Guidelines, CARB will send tentative allocations for each air district with an application. Similar to the Carl Moyer Program, air districts must indicate on the application and notify CARB within 60 days whether they would like to accept the funds, reallocate them, or decline the funds. Specifically, a district has five options. They may either accept the tentative allocation; designate it to another air district to administer; designate it to the shared allocation pool; accept less than the tentative allocation specified on the application and designate the remaining

15

allocation to another air district, the shared allocation pool, or to be redistributed through the distribution formula; or decline all funds. Once the districts have responded accordingly, CARB sums the tentatively allocated funds accepted by districts and redistributes remaining funds through the formula. Before executing grant agreements, districts must provide CARB with a resolution or minute order, approved by their governing board, indicating their acceptance of the funds.

Additionally, Section 5.2 – Contingency Provisions contains information on the process for reallocating funds among districts if there is the potential risk that the funding will not be spent before the expenditure deadline.

- **3.1.1 Shared Allocation for Districts with Less than One Percent**

This shared allocation of FARMER Program funding represents a partnership between 18 air districts with less than one percent of the statewide emissions from agricultural equipment to ensure those districts have the opportunity to have access to FARMER funding and streamline implementation of the FARMER Program. For FY 2017-18, this shared allocation for districts with less than one percent of the statewide emissions from agricultural equipment is $5.6 million. Staff recommends that CAPCOA or one of these air districts be the administrator of this $5.6 million shared allocation on behalf of all of these districts. This facilitates air district participation by streamlining the grant administrative process and by encouraging the pooling of financial and technical resources. These consolidated resources lower the threshold for participation in the FARMER Program and maximize project funding in districts with lower agricultural equipment populations.

Individual projects funded from this shared allocation are subject to all applicable requirements within the FARMER Program Guidelines.

Roles and Responsibilities among these partners are as follows:

XI. CARB notifies the Administrator of funds designated to the shared allocation.

XII. The Administrator approves receipt of funds via resolution or minute order approved by their governing board.

XIII. The Administrator must sign a grant agreement with CARB to accept funds for this shared allocation, maintain a Policies and Procedures Manual, and are responsible for all grant obligations, such as contracts with grantees for project implementation, project inspections, monitoring, and reporting.

16

XII. The Administrator establishes criteria for project selection and approves projects.

XIII. The Administrator provides outreach, prepares the application and project solicitation, performs initial application screening, ensures project eligibility, ranks projects based on project selection criteria, selects projects, and determines recipient air districts.

3.2 ELIGIBLE PROJECT CATEGORIES

To ensure funds are spent efficiently and expeditiously in the first year of the FARMER Program, staff proposes directing investments to agricultural projects that have successfully been implemented through existing incentive programs. To provide additional flexibility, staff also proposes delegating authority to CARB's Executive Officer to approve additional project categories or make modifications to project categories as necessary to ensure that the program will be successful. Staff anticipates if additional funds are appropriated to the FARMER Program in future fiscal years, staff will bring modifications to the Board that will address lessons learned in the first year of the program and additional project categories as deemed necessary.

Staff recommends including the following project categories in the FARMER Program for districts to select from in FY 2017-18: Carl Moyer Program-eligible agricultural projects; the Zero-Emission Agricultural UTV Project; and the Ag Trade-Up Pilot Project in the San Joaquin Valley. These proposed project categories are described below.

- **3.2.1 Carl Moyer Program-Eligible Projects**

Staff proposes including projects eligible under the 2017 Carl Moyer Program Guidelines and any future approved Guidelines, and current and future Program Advisories and Mail-outs, provided that the vehicles and equipment are engaged in agricultural operations, as defined by these Guidelines. These projects include, but are not limited to:

- On-road heavy-duty truck replacement and repower projects;[19] and
- Off-road equipment replacement and repower projects[20] for:
    - Off-road mobile, diesel agricultural equipment ("farm equipment" as defined by Carl Moyer Program Guidelines);
    - Off-road mobile, large spark-ignition (LSI) equipment; and
    - Agricultural irrigation pump engines.

[19] For additional criteria for these project categories, refer to the 2017 Carl Moyer Program Guidelines, Chapter 4, Section C.2.(A)).
[20] For additional criteria for these project categories, refer to the 2017 Carl Moyer Program Guidelines, Chapter 5, Section D.

In addition to the requirements outlined in the FARMER Program Guidelines, Carl Moyer Program-eligible projects are required to abide by all project criteria set forth in the 2017 Carl Moyer Program Guidelines and any future approved Guidelines, and current and future Program Advisories and Mail-outs. This includes the Carl Moyer Program's cost-effectiveness thresholds and reporting requirements, except as modified in the FARMER Program Guidelines or through subsequent actions by CARB's Executive Officer for the FARMER Program.

- **Zero-Emission Agricultural UTV Project**

The Zero-Emission Agricultural UTV Project is a new project intended to encourage and accelerate the use of off-road, zero-emission UTVs in agricultural operations by providing rebates for the purchase of new zero-emission vehicles. The Zero-Emission Agricultural UTV Project would provide incentives for up to 75 percent of the cost of a new zero-emission UTV to qualified individuals, businesses, public agencies and entities, and non-profit organizations involved in agricultural operations.

- ***Eligible Vehicles***

To be eligible for the Zero-Emission Agricultural UTV Project, UTV models would be required to meet the following criteria:

- New: The vehicle must be a new vehicle, as defined in the California Vehicle Code Section 430, meaning a vehicle constructed entirely from new parts that has never been the subject of a retail sale, or registered with the department, or registered with the appropriate agency or authority of any other state, District of Columbia, territory, or possession of the United States, or foreign State, province, or country.

- Zero-Emission: The vehicle must emit zero tailpipe emissions from its onboard source of power (such as all electric or hydrogen fuel cell vehicles), and may not undergo any modification that would allow propulsion by any other means.

- Vehicle Specifications and Performance Thresholds: Eligible UTVs must have a towing capacity of 600 pounds or greater and a total vehicle weight of 700 pounds or greater.

- Warranty Provisions: The vehicle drivetrain, including applicable energy storage tanks or battery packs, must be covered by a manufacturer warranty. Prior to approving a project, CARB or the District may request that the manufacturer provide copies of representative vehicle and battery warranties and a description of the manufacturer's plans to provide warranty and routine vehicle service.

- ***Participant Requirements***

To receive funding for the purchase of a new, zero-emission agricultural UTV, the vehicle purchaser would be required to:

- Be an individual, business, non-profit, or government entity that can show proof of California residency or proof that the agricultural operation for which the UTV would be used occurs in California;

- Self-certify that the UTV would be used exclusively for California agricultural operations;
- Enter into a contractual agreement with the District;
- Keep the vehicle and meet all applicable project requirements for the duration of the contract;
- Provide the District with past maintenance records and/or service history on the UTV that would be replaced;
- Surrender the used UTV, as identified in the pre-inspection, to be permanently destroyed by a District approved dismantler,
- Not purchase, make payments toward, and/or take possession of the new UTV prior to receiving a fully executed contract from the District,
- Not make or allow any modifications to the vehicle systems, including motor and other hardware, the addition of auxiliary power sources, or changes to the software calibrations;
- Commit that any emission reductions generated by the purchased UTV will not be used as marketable emission reduction credits, to offset any emission reduction obligation of any person or entity, or to generate a compliance extension or extra credit for determining regulatory compliance;
- Be available for follow-up inspection if requested by the District, CARB, or CARB's designee for the purposes of project oversight and accountability; and
- Install and maintain an operational hour meter on the new UTV.

○ If during the project life, the hour meter fails for any reason, the hour meter must be repaired or replaced as soon as possible at the owner's expense.

- **3.2.3 Ag Trade-Up Pilot Project**

CARB staff recommends including the Ag Trade-Up Pilot Project as an eligible project category for SJVAPCD to administer. The Ag Trade-Up Pilot Project provides CARB an opportunity to continue evaluating the feasibility of a new incentive model, intended for owners of high-emitting, off-road mobile agricultural equipment that are not well served by existing incentive programs. Owners of small and mid-size farms may not have accessed incentive funds in the past due to low equipment usage or the inability to purchase new vehicles and equipment, even with assistance from other incentive programs. This project category provides an excellent opportunity for these farmers to

affordably upgrade their older mobile agricultural equipment.

The trade-up concept is a two-step transaction in which the owner of equipment with a Tier 0 (uncertified) or Tier 1 certified diesel engine agrees to scrap that equipment in exchange for a previously used and reconditioned piece of cleaner diesel equipment (certified Tier 2 or Tier 3 engine), at little out-of-pocket cost. The used equipment comes from another owner who relinquishes it for an incentive to purchase new agricultural

equipment with the cleanest engine technology (Tier 4 Interim or Tier 4 Final certification).

SJVAPCD has been administering this pilot project since June 2016 and is working with CARB to assess this new incentive model in a San Joaquin Valley-wide scale. If the project demonstrates feasibility, CARB may expand the trade-up concept in future years to become a new, statewide mobile equipment incentive category.

- ***3.2.3.1 Eligible Equipment***

Eligible equipment under this project category include the following three off-road mobile, agricultural equipment types: 1) new Tier 4 equipment purchased, in part, with incentive funding, 2) Tier 2/Tier 3 (T2/T3) equipment to be refurbished for trade-up, and 3) old, high-emitting equipment to be scrapped. The following are specific requirements for each equipment type under this project category:

- The new Tier 4 equipment purchased in part with incentive funding must:
  - Be Tier 4 mobile, self-propelled off-road agricultural equipment with a diesel powered engine greater than or equal to 25 horsepower.
    - The certification emission standard and/or Tier designation for the engine must be determined from the CARB Executive Order issued for that engine.
  - Not have been previously owned and be designated as new by the dealer at the time of purchase. Used equipment are not eligible for funding as replacement equipment.
  - Equipment that served as rentals, were previously leased, or were floor/demonstration models may be eligible on a case-by-case basis determined by SJVAPCD staff prior to funding. Documentation from the dealer may be required.
  - Have an operating hour meter to record annual usage in hours.

- The Tier 2/Tier 3 equipment to be refurbished for trade-up must:
  - Be T2/T3 mobile, self-propelled off-road agricultural equipment with a diesel powered engine greater than or equal to 25 horsepower.

  - Have less than 8,000 hours on the hour meter.
    - The 8,000-hour requirement may be waived on a case by case basis by SJVAPCD.
  - Include maintenance records kept by owner to ensure the equipment is operable and able to be used for a three (3) year project life as stated in contract.
  - Be in good operating condition, meet OSHA safety requirements, and pass the eligibility evaluation conducted by SJVAPCD's sub-contractor.

- The old, high-emitting equipment to be scrapped must:
    - Be uncontrolled (Tier 0) or Tier 1 mobile, self-propelled off-road agricultural equipment.
    - Have a compression-ignition (CI) engine greater than or equal to 25 horsepower.
    - Have been owned and operated in California for the previous two (2) years and must currently be in operating condition.
        - Operating condition will be verified through an inspection process conducted by SJVAPCD staff or its sub-contractor.
        - If selected for funding, the beneficiary may be required to submit documentation demonstrating that the T0/T1 equipment has been in operational condition for the previous year.

3.2.3.2 Budget Requirements

Due to the complex arrangement of the Ag Trade-Up Pilot Project, unique budgetary requirements must be considered. The following budget requirements apply to these types of projects:

CARB funds cover:

- Up to 80% of the cost of the new Tier 4 replacement equipment,
- Up to 90% per T2/T3 equipment for repair, and
- Up to $1,500 per T2/T3 equipment for transportation and mechanical assessment.

Awardees (purchasers of the new Tier 4 replacement equipment) cover:

- 20% of the cost of the new Tier 4 replacement equipment.
    - Awardees would use either cash, or financed loans to fulfil this match requirement.

21

Beneficiaries (recipients of the T2/T3 equipment) cover:

- 10% of the repair cost for the T2/T3 equipment.
    - This is based upon the maximum allowable repair costs, which is $8,500.
    - The Beneficiary would cover 100% of the repair costs exceeding $8,500.

3.2.3.3 Participant Requirements

In addition to the unique budget requirements, the Awardee (purchaser of the new Tier 4 replacement equipment) is required to:

- Enter into a contractual agreement with SJVAPCD,
- Provide SJVAPCD with past maintenance records and/or service history on the T2/T3 equipment,

- Not purchase, make payments toward, and/or take possession of the new equipment prior to receiving a fully executed contract from SJVAPCD,
- Agree to a Project Implementation Phase (time period in which the applicant is required to own, operate, and maintain the equipment) not less than ten years from the date in which the new equipment is received,
- Remain the owner of the new equipment throughout the full term of the agreement,
- Maintain the replacement equipment in accordance with manufacturer specifications,
- Maintain replacement value insurance for the replacement equipment through the full term of the agreement,
- Operate at 100% of the replacement equipment's annual hours within SJVAPCD boundaries,
- Purchase a minimum of a one-year or a 1,600-hour power and drivetrain warranty for the replacement equipment. The warranty must cover parts and labor, and
- Install and maintain an operational hour meter on the new equipment.

o If during the project life, the hour meter fails for any reason, the hour meter must be repaired or replaced as soon as possible at the owner's expense.

The Beneficiary (recipient of the T2/T3 equipment) is required to:

- Enter into a contractual agreement with SJVAPCD,
- Not take possession of the T2/T3 equipment prior to receiving a fully executed contract from SJVAPCD,
- Agree to a Project Implementation Phase (Time period in which applicant is required to own, operate and maintain the equipment) of not less than three years from the date in which the T2/T3 equipment is received,
- Remain the owner of the new equipment throughout the full term of the agreement,

- Maintain the T2/T3 equipment in accordance with manufacturer specifications,
- Maintain replacement value insurance for the T2/T3 equipment through the full term of the agreement,
- Operate 100% of the T2/T3 equipment's annual hours within SJVAPCD boundaries,
- Surrender the T0/T1 equipment, as identified in the pre-inspection, to SJVAPCD's sub-contractor to be permanently destroyed by a SJVAPCD-approved dismantler,
- Agree to not receive money for the scrap value of the T0/T1 equipment,

- Submit annual reports to SJVAPCD that include information on the T2/T3 equipment's hours of operation, maintenance, and any other pertinent information requested by SJVAPCD on a form to be provided to the Beneficiary by SJVAPCD for the duration of the Project Implementation Phase, and
- Release the Awardee and SJVAPCD of any and all liability that could foreseeably arise as a result of the Agreement.

In addition to the requirements described above, projects funded under the Ag Trade-Up Pilot Project must meet all reporting and recordkeeping requirements described in these Guidelines, the 2017 Carl Moyer Program Guidelines and any future approved Guidelines, and current and future Program Advisories and Mail-outs.

- **3.2.4 Additional Project Categories**

In addition to the project categories described above, CARB staff is considering additional options for on-road trucks used in agricultural operations. Staff has heard concerns from stakeholders about funding levels for on-road, agricultural trucks in other incentive programs, especially specialty agricultural trucks, and is considering an additional project category for these vehicles in the FARMER Program.

CARB staff is also considering additional options to increase equipment incentive levels for small growers in disadvantaged and low-income communities. Staff will partner with air districts and community-based organizations to evaluate what equipment incentive levels and outreach would be needed to increase small grower participation in the FARMER Program.

Staff recommends that the Board grant CARB's Executive Officer authority to approve additional project categories as necessary. Staff would be required to first hold a public meeting to establish the criteria for the new program. This may include the options for on-road trucks used in agricultural operations, increased incentives and outreach for small growers in disadvantaged and low-income communities, and expanding San Joaquin Valley-specific projects to other districts or statewide projects.

Providing the authority for CARB's Executive Officer to approve additional project categories and make modifications to existing project categories would enable CARB to respond to new information while providing a mechanism to ensure funds are spent expeditiously.

3.3 REPORTING

GGRF Funding Guidelines set tracking and reporting requirements for agencies that administer GGRF programs, such as CARB. The tracking and reporting required of administering agencies include:

- Develop guidelines, solicitation materials, and grant agreements that contain tracking and reporting requirements for funding recipients, in accordance with the California Climate Investment Guidelines.
- For all projects, collect and compile data from funding recipients, including estimated GHG emission reductions and information on benefits to AB 1550 populations (disadvantaged communities, low-income communities, and low-income households).
- Maintain records and submit reports on expenditures and investment benefits.
- For a subset of projects, collect and compile data to support project outcome reporting.
- Provide records and reports, as requested, to support audits and program reviews conducted by State agencies.

In addition, districts are required to report information on all projects funded through the FARMER Program on an annual basis to CARB. Districts are required to report project information in the Clean Air Reporting Log (CARL) database, either through CARL directly or by batch import. The reported information must be sufficient to populate the required data fields and to calculate covered emission reductions and cost-effectiveness for equipment types where required. Districts will ensure the reported information is complete, correct, and supported by documentation.

Because the FARMER Program is funded in part by GGRF, reporting and recordkeeping is required to quantify and document each project's benefits in keeping with GGRF requirements, in addition to the reporting and recordkeeping required under Carl Moyer Program Guidelines. Funding recipients are required to track annual usage for the new vehicle or equipment, in terms of hours or miles per year, provide location data to allow for calculation AB 1550 benefits, and submit annual updates to districts while under contract.

24

Districts must submit Annual Reports to CARB that, at minimum, include:

- Contract execution and liquidation status of FARMER Program funds.
- Outputs generated by CARL for the default years specified in the utility.
- For the most recent fiscal year, additional funds available to FARMER from the following sources. These funds will be included in the target for the funding year due for liquidation in four years unless the air district directs CARB staff to include them in an earlier year target.
    - The amount of any interest accrued on FARMER Program funds held in local accounts. An air district may choose to designate in the Yearly Report all or a portion of this interest for remittance to CARB.

- Funds recaptured from liquidated projects, including funds provided back to the air district following CARB enforcement actions, identified by project name and funding year.
- Non-grant revenue earned for the FARMER Program by the air district, such as from the sale of scrapped engines or equipment.

- A list of any projects identified as non-performing and a brief narrative of any related enforcement actions.

25

4 PROGRAM IMPLEMENTATION

This section of the FARMER Program Guidelines describes the required oversight and implementation of projects funded through the FARMER Program, including project costs, advance payment, and audit and program review procedures. Projects funded through the FARMER Program would also be subject to the oversight and implementation requirements of the Carl Moyer Program.

4.1 PROJECT COSTS

Definitions and allowable expenditures for costs associated with the grant are defined below:

- Project implementation costs include:
  - Personnel costs and fringe benefits;
  - Operating costs (i.e., rent, supplies, and equipment);
  - Indirect costs (e.g., general administrative services, office space, and telephone services);
  - Travel expenses and per diem rates set at the rate specified by the California Department of Human Resources (CalHR);[21]
  - Overhead;
  - Consultant fees (if pre-approved by CARB); and
  - Printing, records retention, and mailing.

Project costs should be detailed such that they include all necessary staff and tasks to implement the project. If appropriate, this includes activities such as outreach and education and research, data management, and reporting.

In no event shall administrative costs, which are included within the project costs, exceed five percent of the total grant amount. Administrative costs are indirect costs, which are not tied directly or solely to the project, such as distributed administration and general administrative services; non-project related contracts or subscriptions; rent and office space, phones and telephone services, printing, or mailing services not associated with staff working on the project; or any other costs that are not directly and fully incurred to support the grant.

- Technology costs: costs associated with vehicles, equipment, and infrastructure that is either used to demonstrate the ability of technology to achieve emission reductions or to deploy technology to an end user (i.e., business, consumer, etc.)

[21] ARB will only reimburse travel expenses and per diem rates that are set by CalHR. The Grantee will be responsible for travel expenses and per diem rates that exceed CalHR rates.

for the purpose of achieving emission reductions. This includes the direct maintenance of these components, if required by the project.

4.2 ADVANCE PAYMENT

AB 109 directs CARB to "provide advance payments of the grant award to the recipient to initiate and implement the project in a timely manner." Further, CARB, in consultation with the Department of Finance, "shall adopt additional requirements in regulations regarding the provision of advance payments and the use of advance payments by the recipient of the grant to ensure that the moneys are used properly." Consistent with this direction, and with the Legislature's direction to expeditiously disburse grants, CARB intends to provide advance payments of grant awards in a timely manner to support project initiation and implementation with a focus on mitigating the constraints of modest reserves and potential cash flow problems.

Recognizing that appropriate safeguards are needed to ensure grant monies continue to be used responsibly, CARB intends to include specific terms and conditions within each grant to establish control procedures for advance payments. While each grant is different, these protections will typically include, at a minimum:

- Grantees must track interest accrued on any funds received. Interest earned on disbursements shall only be used for eligible grant-related expenses or returned to CARB.
- CARB has the right to terminate grant agreements in accordance with the terms of each agreement, and for non-performance or misuse of funds. In the event of termination, all funds not committed must be returned immediately.
- Documentation is required to support requests for funding. Grantees are required to maintain all supporting documentation for a prescribed period of time, to ensure adequate opportunities for audit exist.

4.3 AUDIT AND PROGRAM REVIEW PROCEDURES

CARB staff will work collaboratively with air districts to conduct Incentive Program Reviews to help ensure that air district programs achieve expected emission reductions and are implemented in a manner consistent with the Carl Moyer Program Guidelines.[22]

The reviews will cover the most recent five-year period and include air districts that represent at least 80 percent of program funding. Additional air districts will be reviewed as deemed necessary by CARB program staff. Small air districts that receive higher funding allocations than previously received through other incentive programs will be subject to more frequent Program Reviews, similar to large air districts.

[22] Carl Moyer Program Guidelines; Chapter 3.R: https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_chapter_3.pdf

Incentive Program Reviews may also include fiscal audits completed by the California State Controller's Office in accordance with Generally Accepted Government Auditing Standards. CARB will have final authority with respect to corrective measures and follow-up, in consultation with the air district.

During the Incentive Program Review process, CARB will:

1) Identify the scope of the review,
2) Work collaboratively, while maintaining open communication with air districts,
3) Ensure objectivity and predictability,
4) Post all reports and related documents on the FARMER Program website, and
5) Conduct follow-up activities to ensure that any deficiencies are mitigated.

Air district staff will work to fully and promptly mitigate deficiencies identified during the review process, work to resolve any disagreements, and request assistance from CARB as necessary.

5 NEXT STEPS AND FUTURE ACTIONS

The proposed FARMER Program Guidelines identify the projects staff recommends funding for the first year. Addressing the air quality impacts of vehicles and equipment used in agricultural operations is a multi-year effort and the proposed FARMER Program Guidelines will set the foundation for a long-term emission reduction program. The proposed FARMER Program Guidelines specify all policy-related details regarding the proposed projects, including eligible applicants, the criteria districts will use to evaluate applications, eligible vehicles and equipment, maximum incentive amounts, and other requirements. This chapter covers the next steps CARB will take to implement the FARMER Program, including the project implementation timeline, contingency plans, and CARB's plans for updating FARMER Program Guidelines in the future.

5.1 PROJECT IMPLEMENTATION TIMELINE

CARB staff held five public workshops and numerous meetings in Northern California, the Central Valley, and Southern California to gather input on the proposed Guidelines in January and February 2018. After the workshops and meetings, CARB staff incorporated feedback and developed these proposed guidelines for Board consideration.

Upon Board approval of the proposed FARMER Program Guidelines, CARB staff will enter into grant agreements with local air districts and/or CAPCOA. These grant agreements will include all programmatic details for districts to implement the projects.

In order to meet CARB's statutory deadline to encumber funds by June 30, 2019, CARB staff expects to enter into grant agreements with air districts within several months after Board approval of FARMER Program Guidelines. This provides districts with approximately three years to fully liquidate funds before the June 30, 2021 expenditure deadline. However, CARB will set timelines well in advance of the expenditure deadline to trigger the contingency provisions outlined in Section 5.2 – Contingency Provisions to ensure that funds are spent before the June 30, 2021 expenditure deadline and will not revert. CARB staff will also continue to work with air districts to ensure sufficient outreach is conducted to inform farmers of the program.

5.2 CONTINGENCY PROVISIONS

This section describes staff's proposed contingency provisions in case mid-course corrections are needed to ensure funding is spent expeditiously and efficiently. Such contingencies are important in voluntary incentive programs where it is not possible to fully anticipate participation levels in advance. Staff proposes that the Board delegate authority to CARB's Executive Officer to redirect funds from Board-approved district

funding allocations in the case described below should the need arise. In all other cases, staff would request Board approval to redirect funds.

- **5.2.1 Contingency Provisions Related to District Funding Allocations**

Proposed district funding allocations are based on each district's statewide emissions from agricultural equipment and each district's air quality and attainment status and staff anticipates that each district's funding allocation will not exceed its agricultural funding demand. However, in the event that participation does not meet expectations and funds are at risk of reverting before the expenditure deadline, staff proposes a contingency plan that would allow the Executive Officer to divert a portion of a district's FY 2017-18 funding allocation to air districts with the greatest demand. Specific direction on how to handle unused funds will be provided in the grant agreements with districts and will follow similar requirements set forth in other CARB incentive programs administered by districts.

5.3 REPORTS TO THE BOARD AND LEGISLATURE

The three funding sources that support the FARMER Program – GGRF, AQIF, and ARFVTF – set reporting requirements for administering agencies. These reporting requirements are discussed in more detail below.

- **5.3.1 GGRF Annual Reports to the Legislature**

All agencies that administer GGRF investments must submit project data, including project descriptions, project location, information on timelines and budgets, GHG emission reductions, co-benefits, and project status. CARB compiles project data and program-level data and works with the Department of Finance to prepare the Annual Report to the Legislature, which is due in March every year.

For the FARMER Program, CARB will report on the outcomes of funded projects, including: GHG reductions achieved or anticipated using the appropriate CARB quantification methodology; progress in meeting or exceeding AB 1550 targets for investments in disadvantaged communities, low-income communities, and low-income households; updates on expected co-benefits achieved or anticipated; and project locations.

30

- **5.3.2 AB 118 Reports**

AB 8 sets requirements for CARB and the California Energy Commission (CEC) to report on projects funded through the AB 118 programs, AQIF and ARFVTF. Because AB 109 allocated the funding to CARB to administer, projects funded through AQIF and ARFVTF will be included in CARB's biennial report to the Legislature. As outlined in AB 8, this report will include:

- A list of projects funded;
- The expected benefits of the projects in promoting clean, alternative fuels and vehicle technologies;
- Improvement in air quality and public health, greenhouse gas emission reductions, and the progress made toward achieving these benefits;
- The impact of the projects in making progress toward attainment of state and federal air quality standards; and
- Recommendations for future actions.

5.4 FUTURE GUIDELINE UPDATES

The proposed FARMER Program Guidelines will set the foundation for a long-term program to reduce agricultural sector emissions. If additional funding is allocated to the FARMER Program in the future, CARB staff will evaluate if there is enough flexibility in the

FARMER Program Guidelines to continue funding cost-effective and innovative agricultural projects or if updates are needed. If staff determines that updated FARMER Program Guidelines are necessary, staff will hold public workshops to solicit input and staff will release updated FARMER Program Guidelines for a 30-day public comment period prior to Board consideration. When developing revised FARMER Program Guidelines, staff will:

- Consider whether district funding is oversubscribed or undersubscribed and if so, whether modifications to district funding allocations are needed.

- Evaluate funded projects and consider whether the projects are oversubscribed or undersubscribed, whether continued funding should be proposed, and if so, whether modifications to the project requirements are needed.

- Evaluate and consider whether San Joaquin Valley-specific projects should be expanded to other districts.

- Reexamine the project categories not funded in FY 2017-18 and consider whether additional categories should be proposed for future funding.

31

- Reexamine opportunities to coordinate with other incentive programs, such as CARB's Low Carbon Transportation Incentives and AQIP.

- Evaluate projects funded with FY 2017-18 funds that assist in meeting the goals of AB 617, which addresses criteria pollutants and toxic air contaminants at the community level.

32

• APPENDIX A: EMISSION REDUCTION QUANTIFICATION METHODOLOGY AND AB 8 ANALYSIS

This appendix estimates the emission reductions of the project categories presented in FARMER Program Guidelines and provides additional details on the methodology developed and assumptions used. This analysis was guided by Assembly Bill (AB) 8 (Perea, Chapter 401, Statutes of 2013) and published Carl Moyer Program and Greenhouse Gas Reduction Fund (GGRF) quantification methodologies.[23]

CARB anticipates updating and revising the analysis in each update to the Guidelines as new project categories are added and as new data becomes available and methodologies are refined. It is important to note that these emission reduction

estimates are illustrative examples of the potential emission reductions that can be achieved with these projects. Refined emission reduction estimates will be calculated as projects are implemented and project-specific data becomes available.

CRITERIA POLLUTANT AND TOXIC AIR CONTAMINANT QUANTIFICATION METHODOLOGY

To calculate the potential criteria pollutant and toxic air contaminant emission reductions associated with each project, staff utilized Appendix C: Cost-Effectiveness Calculation Methodology and Appendix D: Tables for Emission Reduction and Cost-Effectiveness Calculations of the 2017 Carl Moyer Program Guidelines.[24]

GREENHOUSE GAS QUANTIFICATION METHODOLOGY

When calculating the potential greenhouse gas (GHG) emission reductions associated with each project, annual fuel usage is a critical component, as the value determines the GHG emissions generated per unit of fuel consumed. Fuel usage values were derived from the 2014 version of California's mobile source emission factor database (EMFAC2014) when available, or calculated based on vehicle or equipment usage and published fuel consumption rate factors.

Annual fuel usage is paired with carbon intensity (CI) values from the Low Carbon Fuel Standard (LCFS) and the lower heating value (LHV) of applicable fuels to calculate the annual GHG emissions for each project's baseline and replacement vehicle or equipment, as shown in Formula 1.

[23] Cap-and-Trade auction proceeds quantification materials are available at: https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/quantification.htm. [24] https://www.arb.ca.gov/msprog/moyer/guidelines/current.htm.

- **Formula 1: Annual GHG Emissions Based on Fuel Usage**

$$\text{AAAAAAAAAA GGGGGG EEEE} \left(\frac{\text{EE mmmmmmEEmm mmEEAAEE CCCC2 mm}}{\text{yymmAAmm}} \right)$$

$$= \text{LLCCLLLL mmAAmmccEEAA EEAAmmmmmAAEEEEmmyy} * \text{LLGGLL EEoo ooAAmmAA} * \text{AAAAAAAAAA ooAAmmAA AAEEAAuumm}$$

The LCFS Program's carbon intensities represent the average or typical production processes for each fuel used in California. Staff assumed the following pathways for the fuels analyzed:

- Gasoline: California reformulated gasoline (CaRFG) from the LCFS Lookup Table[25];

- Diesel: ultra-low sulfur diesel (ULSD), also from the LCFS Lookup Table; and
- Electricity: California grid average mix, which meets the Renewable Portfolio Standard (RPS) requirements, from the LCFS Lookup Table.

For battery-electric vehicles and equipment, the annual conventional fuel usage was converted to electricity usage using the LHV of the baseline fuel, energy conversion factor of 3.60 mega joules (MJ) per kilowatt hour (kWh), and the energy economy ratio (EER) value, as shown in Formula 2. EER values were derived from the LCFS Program.[26]

- **Formula 2: Alternative Fuel Usage**

$$\text{AAAlmmmmmmAAAAAmmEEAAmm LLAAmmAA UUEEEAAuumm } \blacksquare \quad \blacksquare = \frac{\text{kkkkh}}{\text{yymmAAmm}}$$

$$\text{mmEEAAAAmmAAmmEEEEAAAAAA ooAAmmAA AAEEAAuumm} * \text{LLGGUL}_{\text{ccccccccccccccccccccc}} \text{ ffffccc} \quad 3.60 \frac{\text{MMMM}}{\text{kkkkh}} * \text{EEEEEE}$$

To quantify the total potential emission reductions for each project, staff must first determine the annual emission reductions per project. For each eligible project category proposed in the FARMER Program, annual emission reductions are calculated by taking the difference between the annual emissions for the representative baseline vehicle or equipment and the annual emissions for the representative replacement vehicle or equipment, as shown in Formula 3. Annual emission reductions are in units of U.S. tons per year (tpy) for criteria pollutant and toxic air contaminant emissions and in metric tons of carbon dioxide equivalent (CO2e) per year for GHG emissions.

[25] https://www.arb.ca.gov/fuels/lcfs/fuelpathways/pathwaytable.htm.
[26] https://www.arb.ca.gov/regact/2015/lcfs2015/lcfsfinalregorder.pdf.

- **Formula 3: Annual Emission Reductions**

$$\text{AAAAAAAAAAA EEEEEEEEEEEEEAA EEmmRRAAmmmmmEEEEAAEE} = \text{AAAAAAAAAAA mmEEEEEEEEEEEAAEE}_{\text{bbccbbccccccccc}} - \text{AAAAAAAAAAA mmEEEEEEEEEEEAAEE}_{\text{rrcrrrccccccrrrccccc}}$$

Once the annual emission reductions are determined, staff multiplies the project's annual emission reductions by its project life to calculate the total potential emission reductions for each project, as shown in Formula 4. As noted in the individual project write-ups, staff has quantified emission reductions based on an illustrative example due to the uncertainty in the baseline vehicles and equipment that will be funded.

- **Formula 4: Lifetime Emission Reductions**

$$\text{Lifetime Emission Reductions} = \text{Annual Emission Reductions} * \text{Project Lifetime}$$

EMISSION REDUCTION QUANTIFICATION FOR ELIGIBLE PROJECTS

To quantify the magnitude of emission reductions that can be reasonably expected for each project funded under the FARMER Program, staff relied on past project data when available, or conservative assumptions based on publicly available information. For example, with Carl Moyer Program-eligible project categories, staff used the average baseline and replacement vehicle or equipment funded through the Carl Moyer Program over the last three years to be representative of the given project category.

- **Carl Moyer Program-Eligible On-Road, Heavy-Duty Trucks**

To quantify potential emission reductions for on-road, heavy-duty, diesel trucks used in agricultural operations, staff used a 1999 engine model year, on-road, heavy heavy-duty diesel truck as the baseline vehicle, based on the average truck replaced in the Carl Moyer Program over the last three years. Staff assumed this truck would be replaced with a new, comparable 2018 model year truck.

Staff estimated the truck would travel approximately 11,250 miles per year for the next four years, based on the annual mileage limits of the agricultural vehicle extension provision of the Truck and Bus Regulation. Staff developed annual emission rates for the baseline and replacement truck, as shown in Table A-1.

- **Table A-1: Annual Emissions of On-Road, Heavy-Duty Trucks**

	NOx (tpy)	ROG (tpy)	PM (tpy)	GHG (metric tons CO2e per year)
1999 MY, Baseline Truck	0.2503	0.0276	0.00990	26.380
2018 MY, Replacement Truck	0.0240	0.0017	0.00006	21.905

Using the annual emission rates above, staff calculated the potential annual emission reductions per project, as shown in Table A-2.

- **Table A-2: Annual Emission Reductions for On-Road, Heavy-Duty Truck Projects**

	NOx (tpy)	ROG (tpy)	PM (tpy)	GHG (metric tons CO2e per year)
2018 MY Replacement	0.2263	0.0260	0.0098	4.475

Carl Moyer Program-Eligible Off-Road Mobile Agricultural Equipment

To quantify potential emission reductions for off-road, mobile agricultural equipment projects, staff looked at the average off-road agricultural equipment replacement projects in the Carl Moyer Program over the last three years. Based on this information, staff used a Tier 0 (1988 model year), 132-horsepower, off-road diesel tractor as the baseline equipment, and assumed this equipment would be replaced with a new, 149-horsepower, Tier 4 final tractor.

Staff assumed the equipment would operate approximately 687 hours per year, based on Carl Moyer Program data, and developed annual emission rates for the baseline and replacement tractor, as shown in Table A-3. Because there is limited data available on fuel consumption rates of off-road equipment, staff will collect data and quantify GHG emission reductions for these project categories as FARMER Program projects are implemented.

- **Table A-3: Annual Emissions of Off-Road, Mobile Agricultural Equipment**

	NOx (tpy)	ROG (tpy)	PM (tpy)
Baseline Tier 0 Tractor	0.6829	0.0677	0.0359
Replacement Tier 4 Final Tractor	0.0694	0.0118	0.0061

Using the annual emission rates above, staff calculated the potential annual emission reductions per project, as shown in Table A-4.

- **Table A-4: Annual Emission Reductions for Off-Road, Mobile Agricultural Equipment Projects**

	NOx (tpy)	ROG (tpy)	PM (tpy)
Tier 4 Final Replacement	0.6136	0.0559	0.0298

- **Carl Moyer Program-Eligible Agricultural Irrigation Pumps**

To quantify potential emission reductions for agricultural irrigation pump projects, staff looked at the average off-road agricultural irrigation pumps funded in the Carl Moyer Program over the last three years. Based on this information, staff used a Tier 1 (1997 model year), 160-horsepower, diesel agricultural pump engine as the baseline, and assumed it would be replaced with an electric motor.

Staff estimates that the irrigation pump engine will operate approximately 1,105 hours per year, based on historic Carl Moyer Program data, and developed annual emission rates for the baseline and replacement engine, as shown in Table A-7. Because the

replacement engine is electric, there are no criteria and toxic emissions associated with the new engine. However, because GHG emission reductions are analyzed on a lifecycle basis, there are GHG emissions associated with electricity use for the replacement motor, which are also shown in Table A-7 below.

- **Table A-5: Annual Emissions of Agricultural Irrigation Pumps**

	NOx (tpy)	ROG (tpy)	PM (tpy)	GHG (metric tons CO2e per year)
Baseline Tier 1 Engine	1.057	0.1226	0.0721	75.45
Replacement Electric Motor	0	0	0	22.88

Using the annual emission rates above, staff calculated the potential annual emission reductions per project, as shown in Table A-6.

- **Table A-6: Annual Emission Reductions for Agricultural Irrigation Pump Projects**

	NOx (tpy)	ROG (tpy)	PM (tpy)	GHG (metric tons CO2e per year)
Electric Motor Replacement	1.057	0.1226	0.0721	52.57

Zero-Emission Agricultural Utility Terrain Vehicle (UTV) Project

The Zero-Emission Agricultural UTV Project is a new project intended to encourage and accelerate the use of off-road, zero-emission UTVs in agricultural operations. Because this is a new project category, staff does not have historic project data to use to determine the baseline vehicle. Therefore, staff conservatively assumes that a zero-emission UTV funded under this project would replace a new, 2018 model year, 25-horsepower, conventionally-fueled (gasoline) UTVs.

Staff assumed the agricultural UTV would operate approximately 200 hours per year and developed annual emission rates for the baseline and replacement UTVs, as shown

in Table A-7. Because the replacement UTV is zero-emission, there are no criteria and toxic emissions associated with the replacement UTV.

- **Table A-7: Annual Emissions of Agricultural UTVs**

	NOx (tpy)	ROG (tpy)	PM (tpy)	GHG (metric tons CO2e per year)
Baseline, Gasoline UTV	0.0008	0.0004	0.0002	4.087
Zero-Emission UTV	0	0	0	1.284

Using the annual emission rates above, staff calculated the potential annual emission reductions per project, as shown in Table A-8.

- **Table A-8: Annual Emission Reductions for Zero-Emission UTV Projects**

	NOx (tpy)	ROG (tpy)	PM (tpy)	GHG (metric tons CO2e per year)
Zero-Emission UTV	0.0008	0.0004	0.0002	2.803

Off-Road Mobile Agricultural Trade-Up Pilot Project (Ag Trade-Up Pilot Project) The Ag Trade-Up Pilot Project is a two-step transaction in which the owner of equipment with a Tier 0 (uncontrolled) or Tier 1 certified diesel engine agrees to scrap that equipment in exchange for a previously used and reconditioned piece of cleaner diesel equipment (certified Tier 2 or Tier 3 engine), at little or no out-of-pocket cost. The used equipment comes from another owner that relinquishes it for an incentive to purchase new agricultural equipment with the cleanest engine technology (Tier 4 Interim or Tier 4 Final certification). The emission reductions for this project occur at each step of the transaction, since each equipment owner receives cleaner replacement equipment.

For this analysis, staff calculated emission reductions for the two steps of the transaction: first, from the emissions offset between the reconditioned Tier 3 equipment and the scrapped Tier 0 equipment and second, from the emissions offset between the new Tier 4 final equipment and the Tier 3 equipment that was given to the previous owner of the Tier 0 equipment. Annual emission rates for the Ag Trade-Up Pilot Project were developed for uncontrolled, Tier 0 agricultural tractors in the 20 to 119 horsepower range and Tier 3 and Tier 4 final tractors in the 100 to 174 horsepower range, as shown in Table A-9. Staff assumed the Tier 3 tractor that replaced the scrapped Tier 0 tractor would be used approximately 300 hours per year and the Tier 4 final tractor would be used approximately 800 hours per year.

Because limited data is available on fuel consumption rates of off-road equipment, staff will collect data and quantify GHG emission reductions for these project categories as FARMER Program projects are implemented.

- **Table A-9: Annual Emissions of Ag Trade-Up Equipment**

	Engine Tier	NOx (tpy)	ROG (tpy)	PM (tpy)
Transaction 1	Tier 0	0.1610	0.0210	0.0136
	Tier 3*	0.0649	0.0081	0.0044
	Tier 3*	0.1787	0.0273	0.0133

Transaction 2	Tier 4 Final	0.0221	0.0075	0.0009

*Note: the annual emission rates of the Tier 3 equipment vary between transactions due to the differences in annual usage, which also affect emission rates due to deterioration.

Using the annual emission rates above, staff calculated the potential annual emission reductions for each step of the transaction, as shown in Table A-10.

- **Table A-10: Annual Emission Reductions for Ag Trade-Up Pilot Projects**

	Engine Tier	NOx (tpy)	ROG (tpy)	PM (tpy)
Transaction 1	Tier 0 to Tier 3	0.0961	0.0129	0.0092
Transaction 2	Tier 3 to Tier 4 Final	0.1566	0.0198	0.0124

AB 8 Analysis

AB 8 extended the funding for the Air Quality Improvement Fund (AQIF) and the Alternative and Renewable Fuel and Vehicle Technology Fund (ARFVTF) through 2023, refined the evaluation criteria for projects supported by these funding sources, and introduced requirements that staff followed to develop project scoring criteria. Because the eligible project categories in FARMER are similar to projects historically funded through AQIF, staff is utilizing CARB's established AB 8 analysis for project assessment, as described below.

- Provide preference to projects with higher benefit-cost scores that maximize the purposes and goals of the applicable funding source when awarding funding;
- "Benefit-cost score" means the reasonably expected or potential criteria pollutant emission reductions achieved per dollar awarded by the Board for the project;[27]

[27] HSC § 44270.3.

A-7

- CARB may also give additional preference for the following criteria, as applicable:

    1. The project's proposed or potential reduction of criteria or toxic air pollutants.
    2. The project's contribution to regional air quality improvement.
    3. The project's ability to promote the use of clean alternative fuels and vehicle technologies.
    4. The project's ability to achieve GHG reductions.

5. The project's ability to support market transformation of California's vehicle or equipment fleet to utilize low carbon or zero-emission technologies.
6. The project's ability to leverage private capital investments.

CARB staff annually evaluates potential project categories to assign preference for projects funded by AQIF and ARFVTF, based on the criteria above and consistent with the CARB's past AB 8 analyses for vehicle and equipment projects funded through the Air Quality Improvement Program (AQIP).[28] The AB 8 analysis is fully executed for all of the proposed project categories in the FARMER Program Guidelines.

- **Overview**

Conservative estimates for criteria pollutant, toxic air contaminants, and GHG emission reductions were developed using guidance provided in AB 8. Because criteria pollutant and toxic air contaminant emissions are geographically localized, criteria pollutant and toxic air contaminant emission reductions reported in this appendix are estimated at the tailpipe, consistent with well-established Carl Moyer Program quantification methodology. Greenhouse gas emission reductions are tabulated on a well-to-wheel (WTW) basis, as greenhouse gases are a statewide pollutant. Building upon the quantification methodology described above, this section of the appendix provides information on the following:

- Benefit-Cost Score Analysis;
- Additional Preference Criteria Scores; and
- Total Benefit Index Scores.

- **Benefit-Cost Score Analysis**

Staff analyzed the estimated costs and developed cost-effectiveness values for each project category using well-established cost-effectiveness calculation methodologies for incentives, consistent with that used in the Carl Moyer Program. These

[28] https://www.arb.ca.gov/msprog/aqip/fundplan/fundplan.htm.

cost-effectiveness values are then converted to benefit-cost values, consistent with AB 8 requirements, and described in more detail below.

To calculate cost-effectiveness for criteria pollutant and toxic emission reductions, staff applied an appropriate discount rate and utilized a capital recovery factor (CRF) in the analysis based on 2017 Carl Moyer Program Guidelines.[29] The one percent discount rate was used and the corresponding CRF was determined based on the assumed contract period of the vehicles or equipment supported by a given project. The criteria

pollutant and toxic air contaminant cost-effectiveness of a project is determined using Formula 5 below.

- **Formula 5: Criteria Pollutant and Toxic Emission Reductions Cost-Effectiveness**

$$\text{Cost Effectiveness}\left(\frac{\$}{\text{ton}}\right) = \frac{\text{Incentive Amount per Unit Lifetime Expenditure} * CRF}{\text{Annual Per Unit Weighted Emission Reductions}}$$

Weighted emission reductions are calculated using Formula 6, consistent with Carl Moyer Program Guidelines:

- **Formula 6: Annual Weighted Emission Reductions**

$$\text{Annual Weighted Emission Reductions}\left(\frac{\text{weighted tons}}{\text{year}}\right) = NOx\ \text{reductions} + ROG\ \text{reductions} + (20 * PM\ \text{reductions})$$

Table A-11 provides the inputs and the resulting weighted criteria pollutant and toxic air contaminant cost-effectiveness, in terms of dollars per ton of weighted emission reductions for criteria pollutant and toxic air contaminants. For Carl Moyer Program-eligible projects, the estimated costs were based on average incentive amounts in the Carl Moyer Program over the last three years. For Zero-Emission Agricultural UTVs and the Ag Trade-Up Pilot Project, costs were based on proposed FARMER Program funding levels.

[29] https://www.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_cmp_gl_volume_1.pdf.

A-9

- **Table A-11: AB 8 Analysis – Cost-Effectiveness of Proposed Projects**

Project Category	Annual Weighted Emission Reductions (tpy)	Average Incentive ($)	Cost-Effectiveness ($/ton)
Heavy-Duty Truck Replacements	0.449	$33,574	$19,661
Off-Road, Mobile Farm Equipment Replacements	1.265	$54,125	$4,536

Agricultural Irrigation Pump Replacements	2.621	$20,724	$1,629
Zero-Emission Agricultural UTVs	0.005	$9,000	$621,822
Ag Trade-Up Pilot Project	0.512	$84,000	$17,384

Cost-effectiveness values were then converted to benefit-cost values in terms of pounds of emission reductions per dollar spent. The benefit-cost values for each project were given points based on a scale of one to five points. The bins were determined by taking the high and low resulting benefits and scaled to develop an equal distribution of scores.

Those projects with a benefit-cost value of more than 0.55-pounds of emissions reduced per dollar received a high score of five points. The remaining bins were decreased by 0.15-pound-per-dollar increments with the least cost-effective projects, those projects with a benefit-cost value of less than 0.10 pounds per dollar, receiving the lowest points possible. The benefit-cost value of each proposed project was scored based on the following scale:

5: More than 0.55 pounds per dollar 4: 0.40 to
0.54 pounds per dollar
3: 0.25 to 0.39 pounds per dollar
2: 0.10 to 0.24 pounds per dollar
1: Less than 0.10 pounds per dollar

The resulting scores from the scale shown above were then used in the “Total Benefit Index” for AB 8 project selection. The cost-effectiveness, benefit-cost value, and resulting score of each of the proposed projects are shown in Table A-12.

- **Table A-12: AB 8 Analysis – Benefit-Cost Scores of Proposed Projects**

Project Category	Cost-Effectiveness ($/ton)	Benefit-Cost Value (lb/$)	Benefit-Cost Score
Heavy-Duty Truck Replacements	$19,661	0.102	2
Off-Road, Mobile Farm Equipment Replacements	$4,536	0.441	4
Agricultural Irrigation Pump Replacements	$1,629	1.228	5
Zero-Emission Agricultural UTVs	$621,822	0.003	1
Ag Trade-Up Pilot Project	$17,384	0.115	2

Additional Preference Criteria

Per AB 8, additional preference criteria may be used to provide additional funding preference in conjunction with the benefit-cost scores. The additional preference criteria includes:

1. The project's proposed or potential reduction of criteria or toxic air pollutants.
2. The project's contribution to regional air quality improvement.
3. The project's ability to promote the use of clean alternative fuels and vehicle technologies.
4. The project's ability to achieve GHG reductions.
5. The project's ability to support market transformation of California's vehicle or equipment fleet to utilize low carbon or zero-emission technologies.
6. The project's ability to leverage private capital investments.

Recognizing the wide range of potential benefits, staff analyzed the associated data and equally divided the results into scores between 0 and 5 for quantitative preference criteria. The quantitative preference criteria for each project includes the proposed or potential reduction of criteria and toxic air pollutants, contribution to regional air quality, and the ability to achieve GHG reductions.

Staff used the following steps to develop scoring scales and final scores for the quantitative preference criteria:

1. Quantify the results for each additional preference criteria for the proposed projects;
2. Establish scoring scale increments to generate an equal distribution in points for the proposed projects; and

3. Rank the proposed projects based on the established scoring scale, which is then used in the "Total Benefit Index".

Staff anticipates that the scales for the quantitative additional preference criteria may change depending on the mix of projects proposed, due to differences in the range of expected benefits or when additional information becomes available to refine the evaluation. The data and rationale used to establish each of the criteria weighting factors for the associated scores are described below.

- ***Proposed or Potential Reduction of Criteria or Toxic Air Pollutants***

This analysis considered the magnitude of emission reductions by quantifying the direct criteria pollutant and toxic air contaminant emission reductions expected per average vehicle or equipment supported under each project category. With the benefit-cost score analysis primarily driven by overall project incentive amounts, this additional criteria

allowed staff to make direct comparisons of the emission reductions expected by the different proposed projects, independent of the associated incentive amounts.

For this additional preference criterion, staff analyzed the direct criteria pollutant and toxic air contaminant emission benefits per project, without weighting one pollutant more than others. Resulting total lifetime emission reductions ranged from less than 0.01 tons to 6.99 tons of lifetime criteria pollutant and toxic air contaminant emission reductions per project. The scoring scale for this criterion was established by evaluating the range of lifetime tons of emission reductions between the highest and lowest value to try to have an equal distribution of scores. As a result, the bins were scaled in 2-ton increments. Projects with less than or equal to 0.1 tons of criteria pollutant and toxic air contaminant emission reductions receive one point, while those projects with greater than 6 tons of criteria pollutant and toxic air contaminant emission reductions received a score of five points. The resulting scale for criteria pollutant and toxic air contaminant emission reductions on a per project basis is shown below.

5: Greater than 6 tons of criteria and toxic emission reductions per project 4: 4 to 5.99 tons of criteria and toxic emission reductions per vehicle
3: 2 to 3.99 tons of criteria and toxic emission reductions per vehicle
2: 0.01 to 1.99 tons of criteria and toxic emission reductions per vehicle
1: Less than 0.01 tons of criteria and toxic emission reductions per vehicle

Based on the information described above, Table A-13 summarizes the results and the corresponding score for this additional preference criterion.

- **Table A-13: AB 8 Analysis – Potential Criteria and Toxic Emission Reductions**

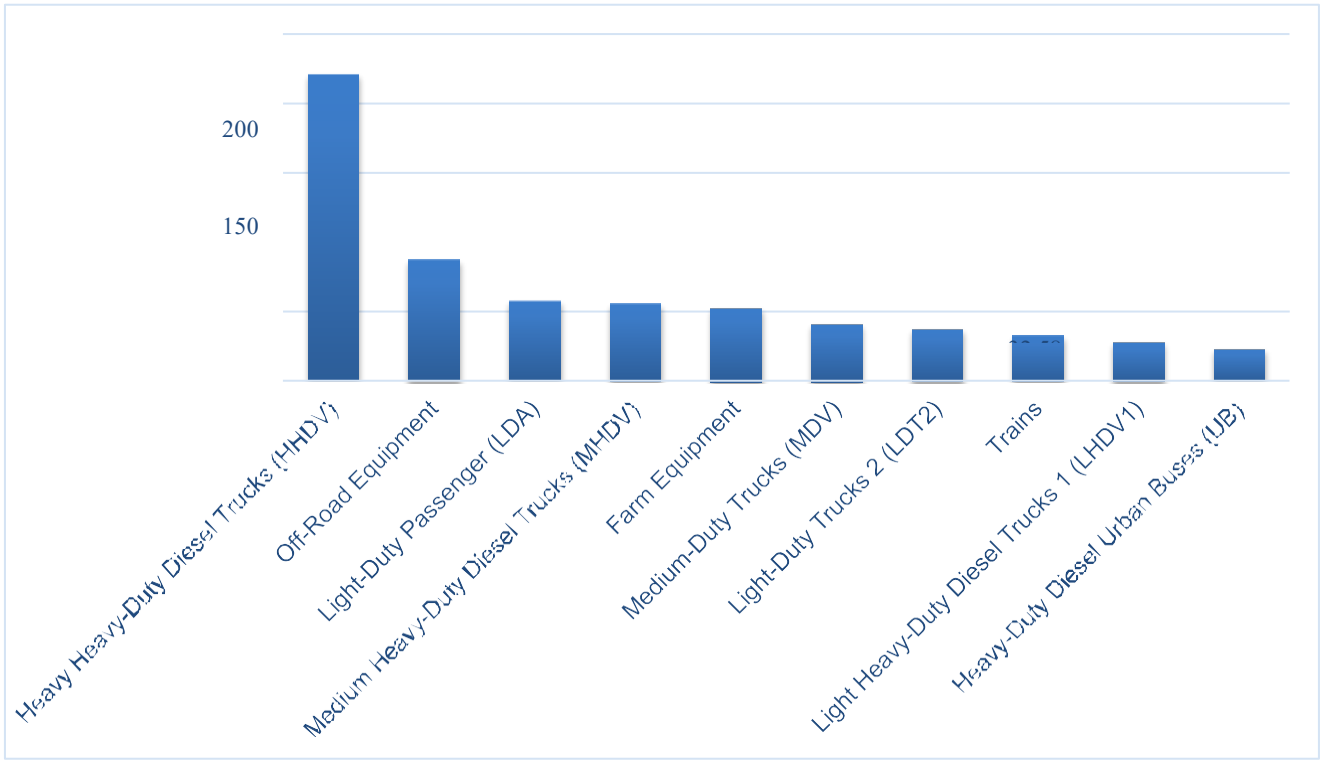
Project Category	Annual Criteria and Toxic Emission Reductions (tpy)	Project Life (years)	Total Criteria and Toxic Emission Reductions (tons)	Score
Heavy-Duty Truck Replacements	0.2621	4	1.05	2
Off-Road, Mobile Farm Equipment Replacements	0.6992	10	6.99	5
Agricultural Irrigation Pump Replacements	1.2512	5	6.26	5
Zero-Emission Agricultural UTVs	0.0015	3	0.004	1
Ag Trade-Up Pilot Project	0.1182	3	2.24	3
	0.1887	10		

- ***Contribution to Regional Air Quality Improvement***

Staff developed a scoring scale based on CARB's emissions inventory for the South Coast and San Joaquin Valley air basins, two of the state's extreme nonattainment regions with National Ambient Air Quality Standards for ozone, and ranked projects based on their corresponding emissions contributions from highest to lowest.

Specifically, staff used the NOx emissions inventory in tons per day from the 2016 State Implementation Plan (SIP) emission projection data for the South Coast and San Joaquin Valley air basins.[30] The ranking scale is based on the emissions inventory shown in Figure A-1.

[30] https://www.arb.ca.gov/ei/maps/2017statemap/abmap.htm.



- **Figure A-1: Largest NOx Emission Sources in the South Coast & San Joaquin Valley Air Basins**

The top ten NOx emission sources were ranked in tons per day for various vehicle and equipment types, ranging from heavy heavy-duty diesel trucks, at 222 tons per day, to heavy-duty diesel urban buses, at 23 tons per day. Because the HHD diesel truck category is the largest emission source by far, the scoring scale for this criterion was established for the range of NOx emissions between the second highest and lowest value. As a result, the bins were rounded and scaled in 25-ton per day increments. Projects corresponding to inventory sources with less than or equal to 25 tons of NOx per day receive one point, while those projects with greater than 100 tons of NOx per day receive five points. Each project's potential contribution to regional air quality improvement was ranked based on the scale below.

5: Category contributes more than 100 tons of NOx per day 4:
Category contributes 75 to 99 tons of NOx per day
3: Category contributes 50 to 74 tons of NOx per day 2:
Category contributes 25 to 49 tons of NOx per day
1: Category contributes less than 25 tons of NOx per day

A-14

Ability to Promote the Use of Clean Alternative Fuels and Vehicle Technologies
Clean alternative fuels are fuels that have lower well-to-wheel emissions compared to conventional fuels, such as electricity, hydrogen, and renewable fuels. Clean vehicle technologies are technologies that emit zero tailpipe emissions, such as battery-electric and fuel cell vehicles, or enabling technologies, such as vehicles that utilize the cleanest available emission control technology or conventional hybrid or plug-in hybrid systems. This qualitative analysis ranked projects by whether or not they used a clean low carbon alternative or renewable fuel or utilized clean vehicle technologies. Staff scored this additional preference criterion on the scale below.

5: Projects that use low carbon alternative fuels and clean vehicle technologies 3:
Projects that use low carbon alternative fuels or clean vehicle technologies 1: Projects that do not use low carbon alternative fuels nor clean vehicle technologies

- ***Ability to Facilitate GHG Reductions***

Similar to the methodology established in the first preference criterion for criteria pollutant and toxic air contaminant emission reductions, staff conducted a full well-to-wheel GHG emissions analysis for the vehicles and equipment supported by the proposed projects. Staff determined expected lifetime GHG emission reductions achieved for each vehicle or equipment funded by the proposed project categories and found that GHG emission reductions ranged from over 200 metric tons of CO2e per

vehicle to less than 10 metric tons CO2e per vehicle. The scoring scale for GHG emission reductions is shown below.

5: Greater than 200 metric tons of CO2e per vehicle 4: 150 to 199 metric tons of CO2e per vehicle
3: 100 to 149 metric tons of CO2e per vehicle 2: 50 to 99 metric tons of CO2e per vehicle
1: Less than 50 metric tons of CO2e per vehicle

Based on the information described above, Table A-14 summarizes the results and the corresponding score for this additional preference criterion. As noted in the individual project write-ups above, limited data is available on fuel consumption rates of off-road diesel equipment, therefore, GHG emission reductions are quantified for on-road projects and projects where the replacement equipment is battery-electric or alternative-fueled.

- **Table A-14: AB 8 Analysis – Ability to Achieve GHG Emission Reductions**

Project Category	Potential Annual GHG Reductions (metric tons CO2e per year)	Project Life (years)	Total GHG Emission Reductions (metric tons CO2e)	Score
Heavy-Duty Truck Replacements	4.475	4	17.90	1
Off-Road, Mobile Farm Equipment Replacements	-	10	-	-
Agricultural Irrigation Pump Replacements	46.64	5	263	5
Zero-Emission Agricultural UTVs	2.803	3	8.41	1
Ag Trade-Up	-	3/10	-	-

- ***Ability to Support Market Transformation of California's Vehicle or Equipment Fleet to Utilize Low Carbon or Zero-Emission Technologies***

This qualitative analysis ranked projects by whether or not technologies with the potential for market transformation are supported by the proposed projects. Staff used CARB's Three-Year Investment Strategy for Heavy-Duty Vehicles and Off-Road Equipment from Low Carbon Transportation and AQIP Investments as a key reference in scoring technologies used for this evaluation. Low NOx engines, battery-electric, and fuel cell electric vehicle technologies, for example, are considered transformative technologies that will help the State meet its air quality goals. Staff scored this preference criterion based on the scale below.

5: Technologies that support market transformation
0: Technologies that do not support market transformation

- ***Ability to Leverage Private Capital Investments***

Staff is proposing not to include this criterion this year as staff works on developing methodologies to analyze the private capital investments leveraged by projects. Staff intends to identify information sources and may include this preference criterion in future updates.

- **Total Benefit Index**

Staff utilized the benefit-cost/cost-effectiveness scores of the proposed projects and the additional preference criteria in the consideration of the projects to be given funding preference under AB 8. Staff developed the Total Benefit Index (TBI) score that preferentially weights the benefit-cost score (at 75 percent of the total score) with additional preference scores (at 25 percent of the total score). Staff weighted the

benefit-cost scores in this manner because AB 8 identified the benefit-cost score as the primary metric to assign funding preference for proposed projects.

Table A-15 summarizes the individual scores and the TBI scores for all of the project categories currently proposed in the FARMER Program.

- **Table A-15: AB 8 Analysis – Total Benefit Index Scores of Proposed Projects**

Project Category	Additional Preference Criteria					25% of TBI	75% of TBI	
	Potential Reduction of Criteria or Toxic Air Pollutants	Contribution to Regional Air Quality Improvement	Ability to Promote Use of Clean Fuels and Technologies	Ability to Achieve GHG Emission Reductions	Ability to Support Market Transformation	Average of Additional Preference Criteria Score	Benefit-Cost Score	Total Benefit Index Score
Heavy-Duty Truck Replacements	2	5	3	1	0	2.2	2	2.05
Off-Road, Mobile Farm Equipment	5	3	3	-	0	2.2	4	3.55
Agricultural Irrigation Pump Replacements	5	1	5	5	5	4.2	5	4.80

Zero-Emission Agricultural UTVs	1	1	5	1	5	2.6	1	1.40
Ag Trade-Up Pilot Project	3	3	3	-	0	1.8	2	1.95

Though the TBI scores for the recommended project categories range from 1.40 to 4.80, each project category provides unique benefits and are therefore included in staff's recommendations. For instance, Zero-Emission Agricultural UTVs have a TBI score of 1.40, but provide excellent GHG reduction benefits and support market transformation to zero-emission technologies. Further, the Ag Trade-Up Pilot Project's TBI score of 1.95 is at the lower end of the spectrum. However, this project category provides owners of small and mid-size farms, who may not have accessed incentive funds in the past, an excellent opportunity to affordably upgrade their older mobile agricultural equipment. These recommendations represent a suite of project categories that a district may choose to fund based on the needs of their district.

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APPENDIX B: MAXIMIZING BENEFITS TO AB 1550 COMMUNITIES AND LOW-INCOME HOUSEHOLDS

CARB's August 2017 Draft Funding Guidelines for Agencies that Administer California Climate Investments (Draft CCI Funding Guidelines) establish requirements and recommendations for maximizing AB 1550 (Gomez, Chapter 369, Statutes of 2016) benefits for California Climate Investments.[31] Although these guidelines only apply to programs funded with Cap-and-Trade auction proceeds, CARB is also striving to maximize disadvantaged community, low-income community, and low-income household benefits for the other investments included under the FARMER Program. This appendix summarizes the steps CARB staff is taking to meet these requirements. CARB is now in the process of updating the CCI Funding Guidelines to address legislation passed in 2017 and FY 2017-18 appropriations. On February 2, 2018, CARB released a discussion document to provide an overview and solicit comments on anticipated changes.[32] These draft FARMER Program Guidelines conform to the August 2017 Draft CCI Funding Guidelines and February 2018 discussion document. The final FARMER Program Guidelines will be implemented in accordance with all requirements of the revised CCI Funding Guidelines.

The specific requirements within the Draft CCI Funding Guidelines for State agencies related to evaluating investments for AB 1550 benefits and maximizing these benefits,

particularly for disadvantaged communities, are summarized below, along with the actions CARB is taking to address them.

Draft CCI Funding Guideline Requirement: Assess overall program structure for opportunities to target investments to benefit AB 1550 populations and evaluate projects for potential benefits to AB 1550 populations, using the criteria contained in Appendix 2.A of the Draft CCI Funding Guidelines.

CARB Action: CARB staff proposes that at least 55 percent of FARMER Program funds be invested in projects meeting one of the AB 1550 criteria with the following targets:

- At least 50 percent of funds for projects located within, and benefiting individuals living in, disadvantaged communities; and

[31]See Climate Changes Investments Guidelines, Volume II, Investments to Benefit AB 1550 Populations, Draft for Public Comments, August 4, 2017. https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2017_draft_funding_guidelines.pdf.
[32] https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/funding-guidelines-discussiondoc-2018.pdf.

- At least 5 percent of funds for projects within and benefiting low-income communities or benefiting low-income households.

The subset of these funds meeting the additional AB 1550 requirement for low- income community household investments that are within ½ mile of a disadvantaged community would be determined based on program implementation and reported in future *Annual Reports to the Legislature on California Climate Investments Using Cap-and-Trade Proceeds*.

CARB considers the investment targets to be a floor and strives to exceed them. In designing project implementation requirements, CARB will consider whether there are provisions that can be incorporated to help ensure that CARB exceeds the minimum targets.

Draft CCI Funding Guideline Requirement: Target funding, to the extent feasible, for projects that are located within and benefit residents of AB 1550 communities and low-income households. When selecting projects, give priority to those that maximize benefits to disadvantaged communities.

CARB Action: CARB will pursue a number of strategies to maximize benefits to residents of AB 1550 communities and low-income households. These include directing FARMER Program funding to local air districts with higher concentrations of disadvantaged communities and increasing outreach to disadvantaged communities.

Draft CCI Funding Guideline Requirement: Provide direct outreach to disadvantaged communities and identify an agency point or contact to provide the information on funding opportunities and to coordinate with other State agencies on California Climate Investments.

CARB Action: CARB has taken multiple actions to outreach to disadvantaged communities. CARB has dedicated staff to assist with disadvantaged community and low-income household outreach on FARMER Program investments and help ensure these communities are aware of funding opportunities. Further, CARB is committed to working with local air districts to provide technical assistance to small growers in disadvantaged communities and low-income households or communities to ensure all FARMER Program application and reporting requirements are sufficiently met. Additionally, CARB is working with local air districts to provide additional outreach for FARMER Program eligible projects within disadvantaged communities.

Outreach events: CARB staff has met with various industry representatives and community-based organizations, conducted public workshops, and conducted outreach and distributed FARMER Program information at the agricultural-related events, such as the World Agricultural Expo in Tulare, California. All of these activities have directly reached disadvantaged communities.

Website: CARB has developed a website to promote FARMER Program projects and increase awareness of funding opportunities for eligible projects under the FARMER Program: www.arb.ca.gov/agincentives.

Outreach by Air Districts: Air Districts will be required to prepare outreach materials in consultation with CARB and conduct outreach to the public and agricultural equipment dealerships.

Draft CCI Funding Guideline Requirement: Create or modify program guidelines or procedures to meet or exceed AB 1550 program targets.

CARB Action: This Appendix outlines the steps CARB is taking to meet or exceed AB 1550 program targets.

Draft CCI Funding Guideline Requirement: Track and report on the AB 1550 of each investment.

CARB Action: All FARMER Program funding recipients will be required to collect and report to CARB all data necessary to determine AB 1550 benefits. This includes all

information necessary to complete the evaluations specified in Appendix 2.A of the Draft CCI Funding Guidelines and the data required in Volume 3 of the Draft CCI Funding Guidelines (Reporting Requirements). CARB uses this information to provide input for the *Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Proceeds*.

Draft CCI Funding Guideline Requirement: Assess how projects benefiting AB 1550 populations meet a community or household need. The Draft CCI Funding Guidelines provides a list of common needs identified by community advocates during the development of the guidelines. Letters of community support can also be used to document that investments address a community need.

B-3

CARB Action: Staff reviewed the commonly identified needs of AB 1550 populations in the Draft CCI Funding Guidelines.[33] The needs being met by proposed FARMER Program eligible projects are listed below.

- **Reduce health harms suffered disproportionately by AB 1550 populations due to air pollutants.**

CARB staff proposes that at least 55 percent of FARMER Program funds be invested in projects meeting one of the AB 1550 criteria. Additionally, all projects funded under the FARMER Program will reduce criteria air pollutants and/or toxic air contaminants as co-benefits, thereby reducing health harms due to air pollutants.

- **Provide educational and community capacity building opportunities through community engagement and leadership.**

Public outreach is a required element in FARMER Program eligible projects.

- **Reduce exposure to local environmental contaminants, such as toxic air contaminants, criteria air pollutants, and drinking water contaminants**.

A portion of FARMER Program expenditures provide incentive funding that reduces toxic air contaminants and criteria pollutants from agricultural vehicles or equipment that are registered, domiciled, or operated a majority of time in an AB 1550 community.

[33] For list of Examples of Common Needs of AB 1550 Populations (as identified by community advocates), refer to Table 2-2 of the Draft California Climate Investments Guidelines.

Attachment H. Budget Detail

Line Item & Itemized Cost				EPA Funding	Non-Federal Cost Share
PERSONNEL	**Hourly Rate**	**Hours per Week**	**Number of Weeks**		
EDC AQMD Staff Time on Components 1, 2 & 3					
Air Quality Technician	$ 23.87	8	240	$ 45,830	
Air Quality Administrative Analyst	$ 42.69	6	240	$ 61,474	
Air Quality Specialist	$ 41.05	8	240	$ 78,816	
Air Quality Engineer	$ 45.95	8	240	$ 88,224	
Senior Air Quality Engineer	$ 52.85	6	240	$ 76,104	
Air Pollution Control Officer	$ 75.77	3	240	$ 54,554	
EDC AQMD Subtotal				$ 405,002	$ -
Placer APCD Staff Time on Components 1, 2 , 3, 4 & 5	**Hourly Rate**	**Hours per Week**	**Number of Weeks**		
Account Clerk	$ 27.21	4	240	$ 26,122	
Administrative Technician	$ 33.08	4	240	$ 31,757	
IT Technician	$ 41.01	4	240	$ 39,370	
Senior Administrative Services Officer	$ 53.59	6	240	$ 77,170	
AQ Specialist	$ 50.14	12	240	$ 144,403	
Senior AQ Planner	$ 56.59	4	240	$ 54,326	
Senior Air Quality Engineer	$ 52.66	4	240	$ 50,554	
Deputy APCO	$ 65.06	6	240	$ 93,686	
Air Pollution Control Officer	$ 89.86	2	240	$ 43,133	
Placer APCD Subtotal				$ 560,520	$ -
Yolo Solano AQMD Staff Time on Components 1 & 5	**Hourly Rate**	**Hours per Week**	**Number of Weeks**		
Administrative Assistant	$ 23.31	6	240	$ 33,566	
Associate Planner	$ 45.32	14	240	$ 152,275	
Planning Manager	$ 55.29	8	240	$ 106,157	
Deputy APCO	$ 73.79	2	240	$ 35,419	
Yolo Solano AQMD Subtotal				$ 327,418	$ -
Sacramento AQMD Staff Time on Administration	**Hourly Rate**	**Hours per Week**	**Number of Weeks**		
Fiscal Assistant	$ 30.81	0.37	240	$ 2,736	
Sr. Accountant	$ 50.29	1.6	240	$ 19,311	
Controller	$ 75.96	0.53	240	$ 9,662	
Division Manager	$ 87.32	0.66	240	$ 13,831	
District Counsel	$ 119.14	0.05	240	$ 1,430	
Admin Specialist	$ 46.55	0.05	240	$ 559	
Legal Assistant	$ 38.31	0.02	240	$ 184	
APCO	$ 105.12	0.06	240	$ 1,514	
Sacramento AQMD Subtotal				$ 49,227	$ -
TOTAL PERSONNEL				$ 1,342,167	$ -
Fringe Benefits	Total Personnel	20%	40%		
Fringe Benefits EDC, Placer, YoloSolano 20% (FICA, Health, Life Ins, Workers Comp, Retirement)	$ 1,292,940	0.2			$ 258,588
Fringe Benefits Sacramento 40%	$ 49,227		0.4	$ 19,691	
TOTAL FRINGE BENEFITS				$ -	$ 258,588

Supplies	Printing Cost	Mailing Cost	Number of Fliers		
Direct Mail Fliers for Woodstove and Chipping Components	$ 0.34	$ 0.50	3,000	$ 2,520	
TOTAL SUPPLIES				$ 2,520	$ -
CONTRACTUAL					
Component 1 Woodstove Incentive (WR)	Incentive Amount	Number of Incentives			
Incentives for disadvantaged, low income & low income area residents in El Dorado & Placer	$ 2,000	1,000		$ 2,000,000	
Incentive, standard amount available to all residents in El Dorado and Placer	$ 599	1,500		$ 898,500	
Incentive standard amount contributed by EDC with State Subvention funds	$ 599	200			$ 119,800
Incentives for disadvantaged, low income and low income area residents in Yolo Solano	$ 3,500	100		$ 350,000	
Incentive, standard amount available to all residents in Yolo Solano	$ 1,000	104		$ 104,000	
Print, online and other forms of advertising				$ 50,000	
	Participants' Contribution	Number of Incentives			
Incentive Program Participants' Share of Cost of New heating Devices Placer & EDC (ave total replacement cost $4190 - avg incentive $1159)	$ 3,031	2,500			$ 7,577,500
Incentive Program Participants' Share of Cost of New heating Devices Yolo Solano (ave total replacement cost $4190 - avg incentive $2225)	$ 1,965	204			$ 400,860
Subtotal Woodstove Incentives				$ 3,402,500	$ 8,098,160
Component 2 Unpaved Road Paving (UPR)	Cost per Square Foot of Roadway	Square Feet of Roadway Prepped	Square Feet of Roadway Paved		
EDC Road prep, planning, grading, roadbase, culverts by EDC Dept of Trans - Leveraged Funding	$ 0.90	985,643			$ 887,079
Road paving with double chip seal by EDC Department of Transportation	$ 0.80		985,643	$ 788,514	
Placer Road prep, roadbase, grading, culverts by Placer Roads Division - Leveraged Funding	$ 0.71	211,200			$ 149,952
Placer: Road paving with asphalt by Placer Roads Division	$ 3.78		211,200	$ 798,336	
Subtotal Road Paving				$ 1,586,850	$ 1,037,031
Component 3 Biomass Chipping and Composting (BCC)	Amount per Cubic Yard	Cubic Yards			
EDC Fire Safe Council and Placer RCD cost to chip vegetation	$ 1.42	1,500,000		$ 2,130,000	
	Cost per Job	Number of Jobs			
Residents' contribution match ($ paid to contractors for clearing/ stacking brush, and value of residents' in kind labor)	$ 229	13,042			$ 2,986,618
Print, online and other forms of advertising				$ 25,000.00	
	Cost per Composting Bin	Number of Bins			
Compost Bins	$ 244	200		$ 48,800	
Subtotal Chipping				$ 2,203,800	$ 2,986,618
Component 4 Biomass Transport (BT)	Cost per ton	Tons Transported			
Transport of Biomass to Composting and Treatment Facilities	$ 50	20,000		$ 1,000,000.00	
Subtotal Biomass Transport				$ 1,000,000.00	0
Component 5 Ag Mobile Equipment Replacements (AMER)	Average Cost per Ag Equipment	Number of Units Replaced			
Grant amount paid to farmers to replace Ag Equipment	$ 78,516	76		$ 5,967,216	
Additional amount paid by farmers to replace old Ag Equipment	$ 19,629	76			$ 1,491,804
Subtotal Ag Equipment Replacement				$ 5,967,216	$ 1,491,804
TOTAL CONTRACTUAL				$ 14,160,366	$ 13,613,613
Indirect Charges	Rate	Hours			
SMAQMD Federal Negotiated Cost Rate					
TOTAL INDIRECT					
TOTAL FUNDING				**$ 15,505,053**	$ 13,872,201
			% staff funding	8.78%	
TOTAL PROJECT COST					**$ 29,377,254**